The Builder.

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On Motive, in Architecture, Sculpture, and Painting.

IN the pursuit of every art, the student encounters a certain number of technical terms, which are as indispensable to the description, as implements are to the execution, of the several processes. Exact comprehension of the meaning of these terms is necessary to a clear intelligence of the art itself. When these words are unnecessarily used, the language degenerates into slang. It might not be difficult to point out writers who have endeavoured to establish a reputation as *connoisseurs* and critics in art by a copious use of this slang.

Again, there are words which are by no means of a technical origin, but which, in the course of time, have received special meanings with reference to particular branches of art. Among these are such expressions as "breadth," in painting, and as "colour," in engraving. Not only is it essential, in order to understand the language in which works of art are described, to have a clear and distinct understanding of such special uses of words; but, further, it may be of great service to the student to trace the usage to its origin, and thus, it may be, to find how some important canon of art has been treasured up in an epigrammatic form.

The word *motive* is one of those which are thus occasionally used. It is an important example of the class of terms to which we refer. For, rightly understood, it conveys in itself a lesson to the artist; and it involves a very distinct condemnation of many works, in architecture, in painting, and in sculpture, which not only meet with much ignorant admiration, but which have even been pointed out by writers as objects worthy of imitation.

The musician has long been taught, by the subtle elegance of the Italian language, to speak of the motive of a musical composition. Without entering into a subject beyond our province to discuss, we may yet remark how often the ear is struck by the frequent recurrence, in some magnificent passage of music, of the magical sequence of notes that forms the central idea of the piece, the veritable motive of the composer. Again, it has often fallen to our lot to be perplexed by a wilderness of sounds, strung together, it may be, with great mechanical skill, but in which the divine informing idea is absent or undiscernible.

In every organised existence may be recognised the embodiment of an idea. We are not about to quote Plato, or to touch the province of metaphysics, but we wish to bring out clearly the meaning of the term motive as applied to any live being. The scientific anatomy of the vegetable physiologist, indeed, carries back the unit of vegetable life, not to the plant, but to the leaf. In each leaf, in each petal, in each anther, he recognises a distinct individuality, bound to its fellows by laws of intimate association, but representing in itself a distinct centre of vital energy. In a bud we may with more propriety recognise the features of separate individual existence. A bud may be excised from one plant, and grafted or budded into another, so as to thrive and flourish, and to produce from the wild stem a branch of its own cultured beauty. But however far we may push the analysis, none can deny that there exists a distinct, and an always recognised, individuality, in the plant itself. In the oak or the willow, the elder or the plum, we are conscious of the presence of an idea which is common to all individuals of the same species, under whatever different modifications they live it out. We may regard such a plant from very distinct standpoints. We may consider it as a producer of human or of animal food; as a means of re-oxygenating the air; as a mechanism for fixing carbon in the form of wood; as an element in the hygrometric condition of the soil on which it grows; or as a feature of pictorial beauty. But any or all of these functions are performed by plants of the same species in a manner different from that which characterises plants of any other species. There is a physiognomy which can at once be recognised,—a specific form, a peculiar fragrance, a special beauty,—which are peculiar to the idea or motive of the individual species.

Again, in animal life, as we rise from those obscure tribes which share with the vegetable kingdom the character of social or compound existence, as in the corals and polyps, we find the central idea of specific form to be more and more distinctly wrought out the higher we ascend in the scale. Special gifts are bestowed on different *genera*, and, in a subordinate degree, on different species. These gifts are in harmony with the habit and the structure of the animal. They are distributed in a manner that gives token of compensating justice. Thus, the mole, in which the visual power is reduced to a low condition, which to us would seem to be total blindness, is endowed with a muscular energy greater in proportion to its size than almost any other beast, with formidable and apt instruments for digging, and with a form and integument in every way suited to its humble subterranean life. Urged by a mighty hunger, by an appetite more insatiable than it is easy to parallel, this paragon of industry no doubt revels in a fierce enjoyment as he excavates tunnel after tunnel in pursuit of insect food. If we anatomise the mole we can have no doubt of the motive of the structure.

We might easily pursue the theme, and, indeed, the subject of the wonderful instinct of all the building tribes is one that would not unnaturally illustrate our pages. We could show how it has not been among the forms which are zoologically the most highly developed, not among the tribes which possess the most perfect mechanical power (enabling them to rise in the air), the most resplendent beauty of colouring, or the most pure melody of voice, that the motive of a reasoning, teachable being has been wrought out. But we have said enough if we have shown the presence of a distinct and appreciable motive in every material form. Thus, true art, which is not a mechanical reflexion, but a quasi-creative imitation of nature, must be impossible in the absence of motive.

Indeed, in the absence of some sort of motive it may at once be admitted that art is altogether impossible. In this seems to lie the great distinction—the barrier which is of kind rather than of degree—between man and his poor relations, the other animal tribes. Skill of the most exquisite and perfect character is possessed by many, especially of the winged species. The groups of arboreal birds contain *genera* that weave textile nests of a beauty that fingers cannot rival. The hymenopterous tribe of insects, and a few of the neuropterous genera, contain those creatures which are, *par eminence*, the BUILDERS of our planet. But industrial energy applied under the guidance of a wisdom that, for want of a better term, we call instinctive, is the highest phase of non-human skill. The emotions may be, and to a far greater extent than we generally admit actually are, common to man and to other animal tribes. Industry in the provision, and even in the storing of food, and in the construction of abode, is displayed by the squirrel and the beaver, the ant and the bee, the weaver-bird and the social grosbeak; but the clothing of an idea with form, however rude, the slightest scratch inspired by the motive of the artist, has never yet been observed, in our world, except among mankind.

This being the case, it follows that the very central virtue of art is the dignity, purity, or beauty of its motive. It is, to external form, what the soul is to man himself. Thus we can understand at once the great charm which the works of, let us say, for instance, the early English ecclesiastical builders, exercise on the imagination. In pure technical ability of execution, the recent works of the Italian sculptors show that the human hand has attained a power and delicacy of execution such as have certainly never been witnessed since the overthrow of Roman civilisation by the inroad of the northern tribes. We cannot doubt that, as regards manipulation, there are masons, stonecutters, and sculptors now to be found who can execute work of a boldness, as well as of a delicacy, which could not have been attained, or only with the utmost difficulty attained, in the reign of Henry III. or of Edward I. But can we for that reason excel the beauty of the architectural work of these reigns, as shown in Westminster, or Lincoln? Can we approach it? The fact is, that the earlier worker had a noble motive. With him work was a religious act. He meditated upon it long before it took outward form. He performed its humblest offices in a grave, earnest spirit. He was not chiefly occupied with the effort to secure at once the greatest number of pence per week, and the greatest number of unemployed hours. Working with his heart in his task, the motive ennobled the toil. It left its impress on the material wrought; and thus, with a rudeness, in some instances, of detail, is blended an elevation of character such as later times have failed to rival.

The motive or main idea of a building or work of art may be more or less clearly, elaborately, and successfully wrought out. Its development will depend not only on the genius of the artist, but on the civilisation of the period; the climate; the material afforded by the locality; and many other surrounding influences. At different eras, and among different people, the mode in which identical motives are embodied in artistic form will differ as widely as will the form of a poem, if translated into different languages. At times the language is so old as to have become absolutely lost,—or at least for a time as unintelligible as were hieroglyphics in the eighteenth century. At times the ruling motive is unmistakable, even when but the ruins of a structure remain. Thus if we find the plan of a hall, or one-chambered building, of certain dimensions, and in certain countries, the idea of a religious purpose is one of those which suggest themselves to the mind. If we find that the astronomical bearing of the building is perpendicular to the meridian, the idea is confirmed. If we trace the place of a *cella*, sanctuary, or chancel, to the east of, and somewhat smaller than, the main building, we become yet more confident. If further we detect the bases of columns, and the foundations of the walls of apsidal or lateral chapels, we become convinced not only of the ecclesiastical nature of the edifice, but even of the character of the rite for the celebration of which the structure was intended. On the other hand, that rite may be so ancient

and that 'structure so unlike any modern example, that while we may have grounds for ascribing a religious character to the building, we can go no further in our explanation. Our great megalithic remains may be cited as an example. On last Midsummer-day,—and we are told that it is an annual custom,—some thirty-five watchers had assembled before sunrise in the inner circle of Stonehenge, to see the sun rise over the large stone known as the Pointer, and strike its first rays through the entrance on to the so-called altar-stone of the ruin. To call this a proof of the astrolatral character of the builders of this magnificent relic of the past would be a hasty and ill-founded generalisation. Direction of a main line of the building to the point of sunrise on a given day has been held to be a mark of Christian architecture, the day indicated being that of the Saint under whose invocation, as it is called, the church was placed. But we find a like orientation in the case of the Great Pyramid. We find it constant in Persian, Syrian, and Grecian temples. Thus we may find the indication of a religious motive in the plan of a building, although of the nature of the *cult* we have not the remotest knowledge.

There is an expression which has attained a certain fashionable prevalence in art, to which we may refer as an indication of the very general absence of any true appreciation of motive, as an essential element, or rather rudiment, of excellence. People will talk of a bit, and when they put the monosyllable in turned commas they regard the expression with complacency, as an evidence of artistic taste and of the command of technical language. In plain truth, nothing can be more opposed to a correct appreciation of the subject. Every artist, who has to trust to his note-book rather than to his memory, is likely to have his own method of taking artistic memoranda. He will jot down the gnarled form of a tree, the picturesque outline of a building, the profile of a beautiful face, the hidden gesture of a surprised figure; and in each of these records of incident he will have a hint for a detail of some future picture. But to take the hint for the idea itself, to present the public with the elaborate study of the trunk of a beech-tree, or with the arrangement of the pots and pans on a kitchen shelf, or the tiles and quarries of the floor, is not to study, but to abuse, art. The "bit" is only of value to the artist; and to him not for itself, but as an element for future utilisation. Purchasers who encourage the production of bits, *pro tanto* discourage the genuine progress of art.

The more distinctly we grasp the motive of any work, whether that of the sculptor, the painter, the architect, or that of the Great Architect of creation—the more accurately we are able to detect the presence of a genuine inspiring idea, even under imperfections of execution—the more shall we enter into the very *arcana* of art. We then contemplate those regions where spiritual and intelligent life strives to embody its conceptions. A powerful impulse may be given to that which is the highest phase of history, the philosophy of human life, by the intelligent study of motive. In regarding the works of art, and especially of the art of the architect, in the present or in past times, we shall be able to unfold, one by one, the successive developments of the primary motive, or the addition of new, and not always harmonious, elements to the original idea. We shall rise from plan to design; from expression, in artistic or industrial form, to primary intelligent motive.

Thus we trace in the architectural sequence of the form of the churches of our own and of other Christian countries the evidence of a great, though a gradual, change in the habits, the wealth, and the form of faith of the builders. Emerging from the gloomy catacombs in which the earliest symbols, visible in *graffiti* on the tufa, are far older than the adoption of the cross as an emblem (although they recall the initials of Jesus Christ, or the declaration of belief in his nature which is implied by the words of which the mystic ΙΧΘΥΣ contains the initials), we find Roman Christianity, under the reign of Constantine, coming forth to take possession of the Basilica, or court of justice, for the celebration of its unmaimed rites. As the records written by Pope Damasus, and by other Mediæval historians of the Papacy, enable us to trace, step by step, the prolongation and formalisation of the services, so does the history of the external church,—the shell, as it were, of the ritual,—show an increasing complexity of structure. The small apse, or rather alcove, in which was placed the chair of the presiding functionary, deepened into the semicircular or polygonal apse, or became transformed into the choir, or chancel, in emulation of the *cella* of the earlier temples. As more room was required for the worshippers, the building was made to reveal its purpose by its plan; and thus arose that beautiful feature, the transept. Ecclesiastical grandeur outran the state of acoustic science. Detailed commemorations rose to acts of worship; and thus around the original nave, the borrowed *cella*, the appropriate transept, nestled and clustered lateral and apsidal chapels; attaining their utmost development in a lady-chapel, which was to the church almost what the church was to its precinct; as in such instances as the abbey churches of Westminster and St. Alban's, the cathedrals of Canterbury and of St. David's, and many others. In all these examples, besides the archæological knowledge that enables the student to fix the date of a moulding, or to trace the history of an arch, there is room for the application of that more philosophical inquiry which shall seize the motive of every modification of structure, and read, in the very structure of the church, an illustrated chapter of the progress of the human mind.

As we carry back this kind of inquiry into the remoter past, the philosophical interest far exceeds the technical or artistic interest. Thus in the plan of the great stone-girt Temple of Jerusalem, which in a few months will be unveiled to the world as regulated by distinct motives of the most unexpected and most unmistakable character, we shall be able to enter into the very council of the founder, whose name is yet a magic word in the East. In the explorations which have been made,—often brutally and ignorantly made,—of the most important of the Egyptian pyramids, a unity of plan has been discovered, as to the purport of which there can be no doubt. These enormous piles (the Great Pyramid itself contains three millions and a half cubic yards) were reared by the Lords of the labour of Egypt, each in turn, for the preservation of his mummied body, till his spirit should return to reanimate it, after the long year of its disembodied existence. The sepulture of the dead, as far as we can trace it, is but a partial performance of the rite of embalmment. It looks forward,—we believe universally,—to that return of the spirit to its former tenement, which many persons conceive to be the meaning of the phrase, the resurrection of the body. On the contrary, whenever we find, as in the *Via Sacra* at Pompeii, *columbaria*, or places for the deposit of urns (a new feature of Palestine, at which the research of the present explorers has unexpectedly arrived), we find the indication of a very different idea. The incremation of the body, which is attested by the use of an urn to contain its ashes, does indeed imply a belief in the immortality of the soul. But it is not as a re-embodiment, but as a shade, that the spirits of the races who consume their corpses by fire, are believed to live. In the elegant lyrics of Horace, and in the libations and flowers which the most cultured of the Greeks and Romans offered to the *manes*, is present the same conception which leads the savages of the Australian groups of islands to burn the war-clubs of their departed chiefs, and led our own ancestors to sacrifice a war-horse on the tumuli of their own.

It would be easy to extend our illustrations of the mode in which, by grasping and apprehending motives, we may glide from art into science, and from architectural study into that of philosophy. But the fact that the unity, purity, and dignity of motive are the noblest characteristics of art, is one that cannot be brought out in too high relief, or insisted upon with too much single-minded urgency.

THE ARTIST AND POLITICS: A QUESTION FOR THE FUTURE.

WE are always ready to benefit by the wise annual utterances of the President of the Royal Academy, and it is a good thing at times to start with a good and well-defined idea, to examine it, and may be to profit by it. A year or two ago President Grant told the illustrious company then assembled before him that the Royal Academy and artists generally had and could have nothing to do with *politics*. Let us admit it, and even go a step further, and say that the less the artist has to do with other people's affairs, and the more he attends to his own, the better and the more profitable it must be for him. If he be a true and a *bond-fide* working artist, he has and must have all his time and attention pretty well occupied without political puzzles to solve and questions to answer. Still, admitting all this, there is now going on in Europe a series of movements, slow though they may be, and to the multitude unseen and unnoticed, which will in the future have no small influence on *art*, not only *out* of the pale of the Royal Academy, but *in* it as well. It is a very wide and lofty question indeed, and a deep one as well, and some little attention is needed to get a good glimpse of it. We must steer well clear of prejudice, and come to see and admit fairly that there are more ways of doing things, artistical and otherwise, in this world than very many dream of.

Civilisation is a very hard word, and many people think they understand its full scope and meaning who never have even taken in its most common signification. Europe is civilised, and Asia is not; but what is "civilisation" in its abstract and most positive sense? We have but just been reminded that there is now going on in Europe a great contest between "civilisation" and what is called "nationality," and that they seem destined to fill up a large space in the records of modern history. The whole subject, comprehensive and profound as it is, is so far from being out of the pale, though it be political, of artistic inquiry and research, that it is of all others the most comprehensive and interesting, artistically, to the thoughtful artist; for in it is the great and, to say the truth, mysterious question, or questions, of the *future* of art and *art-action*. Let us, then, put the great question in its very simplest form, confining ourselves, of course, to its purely artistic aspect. Civilisation and nationality express the idea certainly, but with not a little vagueness. Civilisation is not confined to the *present* age. The old Roman, Cicero, surely was a civilised man, just as much so as is a modern Westminster Hall advocate. The old Roman was a civilised man, not a savage or a mere barbarian. The man who wrote the Book of Job, the greatest of all "literatures," as we are told, surely he had in him a something very much like civilisation, if book-writing be a component and necessary part of it. The Greek was "civilised" when he built and decorated the Parthenon; and what would not the world now give if somebody like a Greek, civilised or no, could but go to work and do a little of such work among the monuments of St. Paul's, or Westminster Abbey? We must not too accurately define such a big word, or go into too much detail about it, for the fact is that it is of such very wide significance and comprehensiveness of meaning, that it may and does include almost everything and everybody that is not actually barbarous or savage. But we need not puzzle ourselves about it. There is no doubt whatever about what the word, *as now used*, signifies. Civilisation means simply and shortly *modern ways of life*, the shopkeeping, and housekeeping, and furnishing of the hour, just as we see it all about us. There are shops and houses in Algiers, and shops in Damascus, and even in "Yarkand"; but no one calls them, or those who serve in them, "civilised." It means, then, the modern ways of life of such places as London, — mighty brick-and-plaster London. There is indeed no *word* that defines civilisation, but the *fact* does, and with considerable accuracy. And this it is that brings us at once into the very heart of the matter; for the question then is, are there not fairly many and diverse "civilisations" expressive of different nationalities and orders of mind, and of different artistic instincts? In other words, may not civilisation have different and even *opposite* branches, one going one way and one going another and a different and opposite way; so that, looking at two of the opposite branches, many might doubt whether *both* could claim the same title. This is, indeed, the war of the age, above all asking of leave of great potentates or national councils. Surely it is a most happy omen for the future, far distant though it be, that there are powerful instincts and aspirations now at work, which are compelling some nationalities to a growth of their own: each to get, or to keep, a nationality of its own, and, we would add, a "civilisation" of its own, a refinement of its own, and, it is to be hoped, a *fine art* and an *architecture* of its own, and of arts subsidiary to it.

What a thought is this, and how opposite from the general European talk and present aspirations. The tendency of the time, truth to say, is to work the whole of diverse Europe into one

uniform whole. Telegraphs, railways, international coinage movements, building "improvements," nay, free-trade itself, is, as we are so perpetually told, bringing all nations under one influence, and making all things in them common to all. It would, indeed, seem to be almost the instinct or passion of the time to do this, and as quickly as possible; for not only are all causes operating everywhere to do it, but actual political and social *force* is used to bring it about the more rapidly and entirely. But,—and it surely is a happy thing that this small word is here useful and necessary to the story,—nature is obstinate, and not a little obstinate sometimes; for such seems to be the force of the nationalising instinct in some races that they will not or cannot accept this *one* "civilisation." The "Scandinavian and the Muscovite" have now equally learned to reject the Teuton and his "gifts," great as they may seem to be, and indeed are. It would almost seem as if the old spirits of the dead past had risen from their frozen graves to remind those who have succeeded them, and who occupy the ground on which they once trod, that they have yet a language and a nationality of their own, and a mental caste, and, may we say it, a *fine art* of their own. Material, social, and even intellectual and moral progress is becoming, nay is become, of less value in Northern Europe than *independent existence*. National pride and aspirations, and pride of race, are, as they ought to be, the predominating feelings. It is impossible to reflect on this magnificent theme without a hope for the future. What, for instance, would it not be to see a new city,—let us say it boldly, a *new* city,—in the very heart of Scandinavia or Poland, or anywhere indeed wherein things are even but a little given to glory in their "national shortcomings," *i.e.*, as compared with things in other more fashionable and favoured localities, but which are yet unsuited to them. What an interest would there not be in such a course of things? Instead of as is now the case almost everywhere, from Naples and Venice to St. Petersburg, and from Paris to Moscow, in all the newly-built parts where the iron girder from Thames-street may be seen, cast, it may be, from the very self-same mould, and with the girder all that is necessary to make up a building. It is absolute uniformity,—and what the modern imperial statesmen are asking and trying for is in reality, though perhaps they do not know it, already to be found in building and architecture! All building and architecture are getting alike all over Europe, and of one uniform type, as though the work of one firm. The style may differ here and there, but the *style-maker* is the same man, and the workman is simply a producing machine.

But, instead of this, suppose this new city to be built up of the thoughts and instinctive feelings and wants of the Scandinavian people, and expressive of them, as are their language and their legends and folk-lore. Of course, it is all but impossible to imagine such a city, or even a single street of it, or a temple, or, indeed, anything in it. Things are completely nowadays in the hands of the international trader. The time was, as we all know, when this state of things we are supposing would have been no novelty at all. It was the normal state of things, and had at all events this one advantage, that it fostered art and fine art, and allowed it to develop itself, each national art-centre doing its own work. And this was *real progress*, though not perhaps that progress of which we hear so much, and which is thought to be all that common humanity can possibly have been brought into this world for. *Progress*, indeed, is a difficult word to define. It was progress when the great Romanesque passed into the Early Gothic, but be it remembered that something was lost by the change as well as *gained*. Nature, be assured, *gives* nothing; a price is demanded for everything, even for progress. So that if it be progress to bring all Europe together, a something is lost by it,—that of the development of each "tribel unit," or European individuality, artistic and otherwise. Indeed, we may fairly say that the battle has fairly commenced, and the future can alone show what is to be the loss and the gain. It cannot be *cheap* art. It cannot be infinite in amount, but it will be *real* and true, and it is surely better to have a little reality and truth to look at than whole floods of stupidities and falsehoods, and of somethings that belong to nobody.

May we not confidently affirm, then, even on the strength of these few and hasty thoughts on a great subject, that *politics* are, after all, most interesting to the artist, even from an artistic point of view? The tendency of the time is to equalise, and to level all things, and to make them alike; and if things go on for another generation or two as they are now going on, there will really be little or no difference between the look, and architecture, and "arts subsidiary" of Venice and London, or of St. Petersburg and Madrid! Where precisely the vast *factory* will be that is to distribute the ready-made and cut-and-dried bricks, and iron, and joinery, it might puzzle a good economical prophet to say, for things are getting into good order elsewhere than here for all these purposes. But of one thing we are quite sure, somebody will do it, and the perfection of the work done will consist not in its *variety*, but in its *sameness*. All will be alike, for such work becomes all the cheaper in exact proportion to its sameness. It all falls from some producing engine, as coins from a mill, and this is only to be accomplished by all things being alike and the same thing over and over again. But, as we have said, "politics" tell us that this is being sturdily resisted, even where it would least have been suspected. Cold Scandinavia will not take it. The "Slaves" even object, and think that there are two ways always of doing the same thing. Unfortunate Poland cannot but dwell on the past of its own, and the "Bohemian man" thinks that there may be a future for him, as well as a dreamy past—so full of romance and shadows!

FUNEREAL ARCHITECTURE.

M. CÉSAR DALY has placed before French architectural circles an essay on "Society and Architecture apropos of funereal Architecture," of which our readers may like to see some account.* His first proposition is: Joy and grief have their expression in architecture. Our existence, he argues, is shared between joy and grief, for indifference is but a vegetable state of the soul, or a momentary suspension of sensibility. Sometimes man laughs, and sometimes he cries, manifesting physically, by a law of his nature, his sentiments of gaiety or chagrin; and art, the magic mirror of the human soul, renders visible, in like manner, emotions and passions, happiness and sadness. In literature, he continues, comedy laughs and tragedy cries; and architecture has its edifices of feasting and triumph, and also its monuments of grief and burial. Of all monuments, the tomb most readily brings to light the plastic talent and poetical sentiment of the architect. M. Daly then dwells upon the troubles of the esthetical instinct in our day. As a cry issues from the throat, sharp or sonorous, according to whether it is caused by grief or joy, or as the face contracts into rigid lines, or expands in gracious curves, according to whether the heart is filled with anger or sadness, so the poet-architect, by a natural instinct, finds beneath his pencil forms expressive of the emotions of his soul; but in the course of the development of civilisations there occur crises, as in physiological development, in which all instincts have to submit themselves to the trouble or disarrangement of the general functions; and, he believes, we are now passing through a social crisis of this momentous description. Contemporaneous architects, he deplores, have fallen into a habit of copying, or of following a vulgar routine. They fail to set before themselves a clear idea, and to work it out with a warm heart and sincere faith. The public, far from being offended with their servility to the past, delights to inhabit a Gothic house, or a villa of the time of Louis XIII., with a *salon* of the date of Louis XVI., and a boudoir in the style of that of Madame Pompadour; or, after death, to repose under the shadow of a Greek *stela*, marked or not by a Christian cross, or, like the painter Delacroix, beneath the Classic tomb of Scipio.

After investigating the cause of the alternative harmonies and troubles in question, and tracing it to the fact that we have not, like the great civilisations that have gone before us, a style of our own, but are content with a resurrection and *renaissance* of other styles, M. Daly proceeds to consider evolution as a reign of principle, and transition as a reign of expedients; and thence, passing to the embarrassment of architects of the present day, owing to the confused and complex social condition, comes to the question,—"Is it possible, in the matter of funereal architecture, to furnish a guide to the contemporary architect?"

This query is answered in the affirmative. Three leading ideas, M. Daly asserts, should be embodied in funereal architecture. First, the idea of death; then, the homage rendered to the dead, and also invocations in favour of the dead. It is impossible, he urges, to separate the first idea from the tomb. It may vary in its character according to the acceptance or rejection of the doctrine of the immortality of the soul and the resurrection of the body; but it must always be there. The two other ideas, the glorification of the dead and the invocation of celestial powers, are sometimes discarded altogether, and sometimes but partially admitted. Every specimen of funereal architecture he adds, may be classed under one of two sections. In the first may be grouped the monuments representing one of the three radical ideas, faith, death, glorification; in the second can be united those compositions expressing two of them or all three. Every tomb is the dwelling of the dead, and consequently the expression of an individuality; it is also a word of adieu addressed to the dead by the survivors, whose image is thus, to some extent, also stamped upon it. In periods of evolution, this double expression has no inconvenience; every one has the same faith, and the tomb is a religious monument to all. But in times of social transition, of doubt and research, he asks—when, perhaps, the dead may have been a free-thinker (*un libre penseur*), and those who rendered him the last offices ardent believers—who shall determine whether the tomb shall be, or not be, an essentially religious monument? Architects, for the most part, accept the decision of those who are going to pay for the tomb; but though this plan is incontestably practical, it is not precisely of the nature to satisfy serious souls. In conclusion, M. Daly avers that religious contests explain the troubles of funereal architecture in our days. All the architectural difficulties arise from diversity of doctrine. Death, the first radical idea to be expressed in a monument, to believers means a new life. Glorification of the dead, the second radical idea, has to be tempered by the fact that one of the Christian virtues is humility. Invocation of celestial powers, the third idea that he considers should find expression, is all in all to believers in its efficacy, but nought but folly to the sceptic. What M. Daly says on this head, of course falls dead in Protestant England. All three ideas he urges, are religious questions. In the middle ages, in the presence of a common faith, agreement in these matters was easy; but to-day it is often difficult. Religion has always been the synthesis of the state of the knowledge and sensibility (moral and physical) of the society that has embraced it, and architecture has been in all time the most complete scientific symbol of the society that has cultivated it. On the reconstruction of a social synthesis (scientific, moral, and material) depends the reconstitution of a collective taste and esthetic unity, and consequently of the evolvement, or *éclosion*, of a new style of architecture.

It is an elegant essay, the result of thought, and likely to lead to thought in others.

* De la Société et de l'Architecture à propos de notre Architecture funéraire. Par M. César Daly. Paris: Ducher & Cie. 1872.

THE ETHICS OF NATURAL LAWS.

"HE that will learn them," says Carlyle, speaking of natural laws, "behold nature is on his side: he shall yet work and prosper, with noble rewards. He that will not learn them, nature is against him: he shall not be able to do work in nature's empire."

The first consideration in the application of natural laws to works of art, it need scarcely be said, should be the *purpose* to which they are to be applied. It is not enough that houses and churches and works of art in general should simply be composed of stone, or brick, or wood: each having some humanising mission to fulfil, should have its voice to speak, and having this should be made to speak the truth; and care should be taken that it does faithfully exercise those duties which it outwardly professes to perform: even the surface ornamentation of a building need never be destructive to this result.

The use of an iron lintel made to represent stone, stronger in its texture, and therefore, if it is to answer any purpose, less in its sectional area, does not conceal its falsehood by a coat of miserable paint. The weight of the superstructure and the width of a span expose a lie.

It may be said that this is the result of comparative deduction; that we judge everything by theoretical comparison with something of which we have a previous knowledge; but I am disposed to consider that the appreciation of the harmony of natural laws received through the senses may be made to form a very large part of man's moral education, and it cannot do this if the principles of its subject are false.

The beautiful form of a flying buttress, however elaborately carved, obviously performs its duty in unison with the lofty Gothic roof from which it transmits the strain. Its ornamental details, therefore, although subservient to its use, should be as a garment clothing the human figure without destroying the grace of its curves, concealing the natural appearance of its strength, or destroying its physical action: anything, in either case, which is false is injurious in its moral result. Science by these means is allied to art, and art to poetry, and "the sermons in stones" preached by our *old masters of arts* have been handed down to us not only as records of history, but as inspired poems, appealing perhaps more strongly in the latter through their traditions. The spirit of a nation that prompts the destruction of its ancient landmarks arises from that poverty of thought which it perpetuates, and which is the foundation of its decay. "The hand of man," says De Lamartine, "is the only machine of the spirit." We have yet to know more of the vital energy of the mind as transmitted to the *hand* in the execution of works of art. As an orator can only move an audience in proportion as he feels himself, so an artist leaves behind him the intrinsic value of his work on canvas, or on stone, which finds a tongue,—

> "When years have drifted onward,
> And the stone is grey, and dim, and old,
> And the hand forgotten that has carved it,
> And the heart that dream'd it still and cold."

And whilst it is impossible to deny that the association with the supervision and companionship of machinery does give to the character a certain force and power, chiefly exhibited when action and presence of mind are most demanded, it has nevertheless a tendency to destroy the finer perceptions of man's nature, and weaken the sensitive reception of natural beauties, together with the more ideal conceptions which should appeal to man in what we call the leisure moments of his life; so that his faith is weakened in those things over which he cannot, by an effort of his will, produce a visible and tangible result. That this is the necessary consequence of the material age in which we live, science, though she owes so much to machinery, has no reason to assert. By the connecting link of art, she is allied to all that is poetically beautiful in nature, whilst nature herself is the great source from which all her materials are drawn. Happily, there appear to be those among us who seem to have recognised what I cannot but think is the demand of the age—the motive-power which can raise us above the dead level of materialism, and spiritual inactivity (which has successfully contended to a great extent not only against art, but against the higher purposes of man's existence), by giving to those whose constant occupation is an impediment to their seeking it, the opportunity of preserving the finer instincts of their nature, by bringing works of art and natural beauties more, as it were, into the highways of their lives.

The faculty which men of science tell you is known as "involuntary cerebration," lightly as it may be esteemed as a term of philosophy, is a mental reception of that which is externally good or bad. Surround a man with debasing objects, and involuntarily his mind is quick to receive and fertile to reproduce them. Combine in harmonious relation the laws of nature, in forms of beauty, for his use and pleasure, and their reception is equally secure.

Every age should have,—we know, indeed, that it has,—the materials for its own representative art. It is for the artist, and for science, in the spirit and with the knowledge of the past, to realise, from its materials, with the facilities, of the age in which we live, those forms of beauty that shall be to a future generation more even, if that be possible, than the past has been to us; valuing always that which is left us in the *hand-work* of antiquity, as breathing almost with the vitality of the old masters, and knowing, as we must, the inspired originality of their conceptions can never be reproduced by an *insensible machine*. The heart in the feeling and sentiment of their genius is developed in their *work*; and this, and this only, is that which must make our work of value to future generations, so far, and so far only, as it speaks to the spirits of others, in the same language, of the *truth* in which it was conceived. BYNG GIRAUD.

THE ENGINEER AND THE DOCTOR.

WITH diseases in general we have but little concern; but with those which are preventible by proper structural works we have always claimed to be concerned equally with the medical profession—if, indeed, the question be not even more within our province than theirs. We therefore are not going out of our line in introducing Mr. Wolff's book* to the notice of our readers. A consideration of the manner in which death usually occurs, he says, may be roughly divided into three modes:—

1. Natural death, or natural decay.
2. Premature death, as when some organ necessary to life takes on an action of disintegration, and death ensues as a consequence, the other organs being healthy; and
3. Accidental death, in which class are zymotic diseases. "All organs being healthy, and during the perfect performance of their functions, some cause external, and in a measure accidental, causes them to take on an action that is an interruption of their natural healthy functions, that disturbs the harmonious balance of waste and repair of the tissues." . . . .

"Whenever it has been possible to trace zymotic disease to its commencement, we shall find such origin invariably marked by the presence of decaying organic matter,—of organic matter that is gradually undergoing a process of disintegration."

The various diseases which make up the class called zymotic, or rather the various forms which they assume, are named; but Mr. Wolff does not agree with those who say that each one is a specific disease—as typhus, enteric fever, cholera, small-pox, &c.; but says they only assume various forms accordingly as various parts of the body are brought into contact with decaying organic matter. These differences of opinion the doctors must settle how they may. They are agreed on the main point, that it is the presence of decaying organic matter in the atmosphere we breathe and the water we drink that causes zymotic disease; and the consideration for us is to inquire whence it comes, and to remove the cause of it, if possible. This is why we want in every town, small as well as large, and in every rural district, the services of a medical officer allied with those of the constructive engineer. Local rates must be levied to a sufficient degree to produce the funds with which all necessary works may be done; but we should never approve of large and costly works being undertaken for which an absolute necessity cannot be shown. We say that all works are absolutely necessary the effect of which is to prevent disease; but we go no further in advocating the levy of local rates, and making that levy compulsory. We should not, for instance, approve of a particular street being paved in an exceptionally expensive manner, except with the almost unanimous consent of the whole of the inhabitants; nor that a new town-hall should be screwed out of the pockets of those who are satisfied with the old one, unless they should be so few in number as to make the action a just one. There are, unfortunately, ill-conditioned and unreasonable people who would be content with anything at all, or nothing, if the execution of something better would require them to contribute to it,—men who have no *esprit de corps* or public spirit; and these we should think it quite within the limits of justice to leave out of consideration. At the same time, we think local rates should not be compulsorily levied for such works as we here indicate merely because a bare majority may be on some occasion got to sanction it. In respect of works, however, that can be shown by scientific reasoning to be necessary to prevent disease, in all alike, we do think that local rates should be levied compulsorily, and without hesitation. The day, happily, is gone by when it could be discussed whether the old form of cesspools should be abolished,—those, namely, which received all the house-refuse, liquid as well as solid, and were ingeniously contrived to let out the liquid almost as fast as it went in, and so did not often require to be emptied. These do exist in places yet undiscovered by sanitary inquisition, but nobody can now defend them when discovered. Much the best way, as far as we know at present, of preventing exhalations of decaying organic matter into the atmosphere we breathe is to sluice it all away by means of drains and sewers to some place where the solid and useless parts of it may be retained, and land irrigated with the liquid part; but land is not everywhere to be had, and where land cannot be had it may not be at all impossible yet to construct dry cess-pits which shall give off no exhalation of decaying organic matter, and so contribute nothing to the cause of zymotic disease. We are afraid, however, that there is something else which contributes greatly to it in towns of much traffic, and which is not so easily to be dealt with. The horse-dung, we imagine, is a great contributor to the cause of zymotic disease, triturated and blown about as it is. The engineer can prevent this, but the medical officer must take it upon himself to say whether the means to be adopted would or would not cause other evils as great as that to be done away with. Then, in overcrowded houses, or, indeed, in any house to some degree, exhalations from living bodies contribute their quota to the cause of zymotic disease. These, although we cannot prevent them, we can nullify to such a degree as to reduce their influence to harmlessness; but to do it we must have plenary power to pull down and reconstruct houses,—styes, or what shall we say?—which have been built or bought with the private moneys of individuals, and therefore have become personal property. How is this to be interfered with? Vested interests in anything that is for the good of the community, or, to say the least, that is not positively objectionable to it, may well be regarded with jealousy, lest an autocratic interference might do an injustice; but what shall we say of these wretched tenements wherein people, both good and bad, are crowded by their pecuniary necessities, to the destruction of their own health and to the filling of the pockets of speculators in this kind of thing? We can say nothing new: we can only reiterate that it is abominable and unjust, and that it is for statesmen to find a remedy, and to show how the health of the people of this country may be maintained and perpetuated.

Self-government is a great idea, and probably the ultimate form of any "government" whatever will be reduced to this form; but in the meantime let us own that we are in leading strings, as children are, in sanitary science, disguise it as we will; and we cannot afford to let pass unnoticed any contribution, such as this book, towards a better understanding of the subject. If it does no more than point to the kind of man we want for medical officer, it will do much. Those who happen to be acquainted with the kind of man, often appointed to this office by Poor-law Guardians, and who appreciate at the same time the vast importance of the office, will best appreciate the value of what we say. It is highly important that the colleague of the engineer who is to construct sanitary works, should be able to report with no uncertain sound upon what is necessary to be done.

We have said that Mr. Wolff attributes all zymotic diseases alike to the presence of decaying organic matter,—as, indeed, do other medical men; and that he says that the various forms they assume are not to be attributed to specific poisons, which produce specific diseases or forms of disease, but that the form assumed depends upon the part of the body brought into contact with it. He says, "climate has undoubtedly a powerful influence in determining the form that zymotic action shall assume. Thus, in India, the especial home of cholera, scarlatina is comparatively unknown; and typhus is so rare, that it is even now a subject of debate whether it ever occurs in those climes. Egypt appears to be the cradle and favoured site of the plague. Ireland is known to be never free from typhus, whilst enteric fever is well known to be endemic in England. . . . . Certain meteorolic conditions, the precise nature of which cannot in the present state of science be explained, must be admitted as an additional determining cause, that has an immense influence in fixing the prevailing form that zymotic disease shall assume. Thus, for several successive years, the intestinal canal is the favourite structure affected by zymotic disease, and we see year by year the numbers of deaths from diarrhœa increasing until the cycle culminates in an epidemic of cholera. It has been remarked that the sum of deaths from all forms of zymotic disease is a tolerably constant quantity, whilst

* Zymotic Diseases: their Correlation and Causation. By A. Wolff, F.R.C.S. J. & A. Churchill. 1872.

the distribution of the sum amongst the various forms is a quantity constantly varying;" and he quotes from the returns of the Registrar-General the number of deaths from all causes and from zymotic diseases from the year 1840 to that of 1867, distinguishing the various forms of small-pox, measles, scarlatina, diarrhœa, cholera, and typhus, by which it is seen that, excepting the two cholera years of 1849 and 1854, the whole numbers are nearly even, while the separate numbers vary greatly. This seems to confirm the author's views, and of course he adduces these numbers to prove his case; but why do we refer to them in the *Builder?* For the purpose of making the remark that we believe that all this slaying of thousands of healthy and upright people may be prevented. Death, of itself, is rather a blessing than an injury to the world, *after* we have done our work; but it is a beggarly and poor philosophy that would teach us to regard the killing of people as necessary because statistics do show that out of a thousand living a certain number have died; and this because of the neglect of those who can prevent it.

LEEDS.

ROUNDHAY PARK has been opened and the chief stone of the new Exchange laid by Prince Arthur.

The opening of the park, in presence of 50,000 people, preceded the laying of the stone, which was done on the day following. The park is situate about three miles and a half from the centre of the town, and was originally in the possession of the Cistercian Order of Monks; but after the dissolution of the religious houses it passed into the hands of several distinguished families. It possesses several objects of interest to the lover of nature, and also, what is indispensable to a park of any pretension, a lake, nearly three-quarters of a mile long, and more than a mile and a half in circumference, presenting an almost unbroken expanse of 33 acres, and a depth of about 60 ft. It occupied ten years in its formation, and cost the late proprietor 15,000*l.* There is a cascade formed by the water of the lake, rushing over an embankment of stone into a leafy dell some 50 ft. below. There are various other objects of interest, such as the ivy castle, rustic bridges, and the many picturesque views which strike the eye at almost every turn. The park was purchased by the people, and had to be paid for by money raised on the security of the rates. Originally the park consisted of 733 acres of land, a considerable portion of which had been laid out by the former owners as a park, with gardens and the extensive lakes, at a great cost. From 300 to 400 acres are devoted to the purposes of the park, and the remainder of the land not required for park purposes is to be sold for villa residences and gardens, which will provide a considerable sum towards the cost of the park, which will be 139,000*l.*

The style selected for the Exchange, which will occupy the site of the old Commercial Buildings, Boar-lane, is Perpendicular Gothic, picturesque in outline, and in harmony with the architecture of Mill-hill Chapel, which adjoins the site. The building will consist of four stories. Over the principal entrance, which will be at the junction of Boar-lane and Park-row, there will be an outer porch, composed of three arches resting on polished granite shafts. Over this will be an oriel window, and above this again a two-lighted window with broad mullions. A prominent feature will be the tower, surmounted by a spire which will reach the height of 118 ft. from the ground. In the upper stage of the tower provision is made for an illuminated clock. Facing Park-row there will be an oriel window, and the angle of the block next to Mill-hill Chapel-yard will be surrounded by a turret, with conical spire, rising to a height of 84 ft., and covered with slate. The roof will be covered with green Coniston slate. The Exchange will be in the centre of the block, and the news-room on the same level to the left. The Exchange, according to the present designs, will be circular in form, its diameter being nearly 60 ft., and the area will be increased somewhat by a large semi-circular bay. Round the room there will be an arcade of twelve arches, composed of brick and stone, and resting on pillars with carved capitals and corbels. From the corbels will spring ornamental iron trusses to support the roof, which will be 56 ft. from the floor at the highest point, and divided into hexagonal panels. Over the arches will run a panelled course in stone and brick, and the walls to a certain height will be of cleansed ashlar stone. A large glass dome in the roof will throw light into all parts of the hall, but it has been thought desirable to make the lighting still more effective by windows overlooking the chapel-yard. The floor of the Exchange will be formed of Dennett's fire-proof concrete, and covered with encaustic tiles. Beneath will be the basement, which will be of nearly the same dimensions as the Exchange, excepting in point of height, that being 17 ft. from floor to ceiling. It is intended that the apartment shall, if possible, be let as a restaurant, with a separate entrance from Boar-lane. It will be lighted by lofty windows, also facing the chapel yard. Under the news-room, on the basement, will be a room of proportions equal to those of the restaurant, and this it is intended to devote to the purposes of a billiard-room, the light to be obtained from Park-row. The news-room will be 45 ft. by 24 ft., and in height 17 ft. 6 in. It will be lighted by large windows looking into Park-row and the Chapel-yard. Over the news-room will be a suite of apartments suitable for a club, the entrance to be from Boar-lane. The cost of the erection of the entire pile is estimated at 18,000*l.*, including fittings. The designs of the building have been prepared by Messrs. T. H. & F. Healey, architects, Bradford. The clerk of the works is Mr. J. T. Brown; and the contractors for that portion of the building now in progress are Messrs. Bookman & Broomhead.

The first side of Leeds New Bridge, on to which it is intended to divert the traffic now passing over the temporary bridge, slowly approaches completion. It is some time since six girders which span the river, and fifty cross-bracings by which they are united, were completed, and for the last few weeks the buckle-plate flooring has been proceeded with. The ornamental parapet is also nearly complete. In the centre of the parapet, on each side, there will be a pediment, supporting a pillar, which will contain three globular lights, and some progress has been made with one of the pediments. On the top of the buckle-plates it is intended to lay down bituminous concrete to the thickness of several inches, and above that will come the wooden pavement which, we understand, it has been determined to lay down. A portion of the concrete has been laid. It is expected that the portion of the bridge now going up will be sufficiently advanced to allow of the diversion of the traffic about the end of next month. The completion of the whole, it is estimated, will be attained about March or April of next year.

A fatal accident has occurred at the stoneyard belonging to Messrs. Ackroyd, adjoining the New Dock Basin, near Crown Point Bridge, Leeds. An immense block of stone, weighing eight or ten tons, had been consigned thither on a wherry from Birstall, in order that it might be sawn into slabs; and whilst it was being removed from the wagon by means of a Goliath crane, one of the large parallel beams on which the crane travelled broke in two, and with the pieces fell the ponderous crane itself. Three men were meanwhile standing on the small platform surrounding the crane, having been engaged in heaving up the huge block, and they were also precipitated from the elevated position to the ground, which was covered more or less with stones of similar dimensions. One of them was killed on the spot, a portion of the crane having fallen upon him; and the other two were seriously injured. At the inquest, the jury, after an inquiry which lasted for three hours, found a verdict of "Accidental death," and recommended the periodical examination of cranes, which, in their opinion, should be of wrought iron. Mr. Ackroyd said, if the same crane was again used, the girders should be of wrought iron.

In connexion with the improvements in Market-street, Call-lane, and other parts of the town, a number of building sites have been offered for sale by the corporation. Only eight of the sites offered were sold, the others being withdrawn. The following were among the lots sold:—Building site, at the corner of Park-cross-street and St. Paul's-street, containing 73 square yards, at 10*l.* 1s. per square yard; a plot of land, with part buildings, at the corner of Park-square and St. Paul's-street, containing 84 square yards, at 7*l.* per square yard; a plot of building land, adjacent to the last-named lot, containing 54 square yards, at 5*l.* 7s. 6d. per square yard; a plot of ground and buildings thereon, at the west end of Brunswick-place, containing 138 square yards, at 2*l.* 10s. per square yard; three dwelling-houses, near to the Cattle Market, containing 464 square yards, at 4*l.* 5s. per square yard; a site in connexion with Regent-street extension, containing 180 square yards, at 12s. per square yard.

The new building of a music publisher, in Park-row, now completed, has the principal front towards Park-row, and has been designed to group harmoniously with the adjoining building recently erected for the Royal Insurance Offices. It has a frontage of about 53 ft., and the height from the street to the apex of the centre gable is 65 ft. It is entirely of stone, with granite shafts to the windows. The ground-floor front is divided into three bays, the centre one having 13 ft. clear width, containing the shop entrance, which is deeply recessed and flanked with side windows. The side-bays have 12 ft. clear width. These bays are all 16 ft. high from the causeway. This story is flanked on each side by a stone pier, formed into three shafts, with moulded bases and carved caps. The piers are carried up above these, corbelling out to form the ends of the balcony. Each of these has the figure of an angel projecting boldly from the pier, one holding a harp and the other an organ. A balcony runs the whole length of the shop front, immediately over it, the front being formed by a wrought-iron railing, which, however, is not yet fixed in place. The first floor has a range of six windows coupled, with polished granite pillars dividing them, and deeply-moulded circular arches and carved hood-moulds. The pillars and the jambs have moulded bases and carved caps. The second-floor windows are of similar character, a triple window being in the centre and a double window on each side. The centre window has a stone balcony, projecting on corbels, and with pierced panels and carved dados. A corbel-course immediately over these windows divides them from the windows of the top story. These are three dormer windows, the centre one double, with pillar between; the side ones single. The staircase is placed between the saloon and the Royal Insurance building, and is carried up to a level with its cornice, and finished with a pavilion roof, so as to break the transition from the higher to the lower level. It has an entrance-door from Park-row, and windows of varying character. The saloon extends from Park-row to Basinghall-street, and is 105 ft. in depth, and in width varies from 40 ft. to 49 ft. The ceilings are coffered and enriched in plaster. The whole is painted and decorated in quiet colours, by Wood & Son. Mr. James Wood, of Leeds, is the contractor for the woodwork throughout. Various woods are used in the fittings,—pitch pine, American walnut, mahogany, and bands of inlay. The floor of the front part is laid with parquet, by Arrowsmith, of London. The gas brackets and standards are by Charles Smith & Son, of Birmingham. The carving throughout has been done by Mr. Mawer, of Leeds; and the stonework by Mr. John Wood.

CO-OPERATIVE BUILDING.

ONE result of the strike in the London building trade has been the formation of a London Company of Builders, established, in great measure, at the instance of Mr. Hughes, M.P., and Mr. Morrison, M.P., to test the principle of co-operation as a preventive of strikes. In connexion with this movement, a meeting has been recently held at the Co-operative Hall, Castle-street, Oxford-street, when its objects were explained by Mr. C. R. Roberts, the secretary. It was stated that the experience of the past few years has satisfactorily proved that the only remedy for strikes,—"disastrous alike to employers, workmen, and the community at large,"—consists in securing, in one form or another, the personal co-operation of the workmen, and that this can obviously best be effected by their becoming, in a greater or less degree, capitalists themselves. Allusion was made in the prospectus to the success which has attended the co-operative movement in the North of England; stress being especially laid upon the case of the Rochdale Pioneers, whose capital has risen from 28*l.* to upwards of a quarter of a million in twenty-five years. The nominal capital of the building concern is 10,000*l.*, and the company gives each *employé* an opportunity of becoming a shareholder, and employs any shareholder, if suitable, in preference to one who is not a member. They also propose dividing amongst

all *employés* one-half of all surplus profits after paying 10 per cent. on the subscribed capital. Mr. Roberts stated that fifty of the London workmen have already become connected with the committee, and that on the last pay-night 40*l.* of their money were received. With the exception of Mr. J. S. Laurie, of the Inner Temple, the directors are working men, and, in addition to that gentleman, Mr. T. Hughes and Mr. Morrison act as trustees.

JERUSALÆM: MASONS' MARKS.

THE last quarterly publication of the Palestine Exploration Fund includes a plan of the Church of the Knights of St. John in Jerusalem, drawn by Herr C. Schick, after explorations of the site made by him in connexion with the Prussian Government. A number of the masons' marks found on the stones of the building accompany the plan, and are seen to be precisely similar to those that we have given at different times from various other countries,—England, France, Germany, Spain, Portugal, Belgium, Switzerland, &c.,—including particularly the five-pointed star (formed of a continuous line), and the hour-glass shape. These marks would have served to show, had it been necessary, that the builders were European and Christian. There is yet more to be said about these symbols and the occurrence of exactly the same marks in many countries between the eleventh and sixteenth centuries. A belief in the usefulness of the inquiry has grown since the conductor of this journal first pointed out, now many years ago, the wide-spread existence of masons' marks, and published a collection in the *Archæologia*.

The report contains also some interesting communications from Mr. Tyrwhitt Drake, in which he gives a lamentable account of the physical and mental condition of the fellaheen. The heat at the time of writing (June, 1872), was intense, and justified, he thought, the fitting, though somewhat coarse, expression a fellah used to him,—"A gate of hell is open to-day."

DANGEROUS SUBSIDENCE AT JARROW.

AN extraordinary destruction of property has occurred at Jarrow-on-Tyne. Within recent years extensive chemical factories have been established there, and large extensions have been made to them during the past two years, especially in carrying the works well out into the river upon wharfs. One of the largest of these chemical factories belongs to Messrs. Kenmir. It occupies a site on Jarrow Quay, a short distance from the Tyne General Company's landing, and it has a river frontage of from between 150 to 200 yards. The works are continued up to an old ballast-hill. Along the quay-wall were erected a number of warehouses and chambers, the chambers being appropriated to the manufacture of carbonate of soda and bleaching-powder. These last erections rose in tiers to a higher portion of the works, the ball-furnaces and acid-chambers being erected upon the ballast-heap. The River Tyne Commissioners have been deepening the river in the neighbourhood of Jarrow. The chamber on the wharf nearest the river seemed latterly to have a tendency to fall over. It was noticed that a slight fissure ran along the "tank" upon which the outside of the acid-chambers stood in a line with the river. Work, however, was resumed at the factory as usual; but, as the tide ebbed, it was clear that those portions of the works situated between the quay and ballast-heap were settling down, and the men withdrew to a place of safety. One by one the erections connected with the bleaching-powder department tumbled down in ruins, and the massive levels of tank gradually broke up and subsided into the ground, until the whole of the erections covering the area of the entire length of the works, and for some 60 yards or more backwards, were one mass of ruins. The chamber, which was the first to give way, was soon followed by that of the general warehouse built on the east end of the quay, the crystallising-house, the still-house, the bleaching-powder chambers, the lime-house and lime-kilns, the dissolving-house, and a new bleaching-powder chamber of extra size, which had only that morning been packed for the first time. The large range of pyrites furnaces escaped with comparatively slight damage at the east end; but the whole of the dissolving-pans, immediately in front of the range of furnaces, have sunk completely out of sight, and a quantity of bleaching-powder, packed in barrels ready for shipment, has disappeared also. The sinking of the ground seems to have been greatest midway between the quay and the top of the ballast-heap, where the ground has subsided fully 30 ft. Near to the extreme west end of the works a crane on the quay has also been demolished. At the extreme west end of the works the subsidence becomes gradually less, until it assumes the appearance of a mere ordinary crack. The total extent of the main fissure from east to west is about 300 yards, and the damage done may be roughly estimated at about 20,000*l.* In the departments which have suffered there were employed between 200 and 300 men. The cause of the slip is differently accounted for. One theory is that the deepening of the river has caused the sand to wash out from under the foundation, and that the excessively wet season has so weighted and softened the surface as to cause it to break in. Another is, that the workings in some old Jarrow coal-pits have shrunk, and have caused the subsidence of the surface and the immense destruction of property. About a fortnight before there was a slip on the works of Messrs. Sheldon & Co., at Hebburn, fronting the river, and 3,000*l.* damage was done. The quay wall remains sound, and that it has been more a subsidence than a slip is manifest from the incline of the wrecked buildings, those next the river falling landward, and those next the land falling riverward. We are disposed to ask if an architect was employed in the erection of the warehouses?

THE PIPES OF THE HYDRAULIC PRESSURE COMPANY.

THE Wharfs and Warehouses Steam-power and Hydraulic Pressure Company are about to lay down their pipes along Blackfriars Bridge, having obtained the consent of the corporation to do so, and the work is to be executed under the direction of the City architect. It appears, that had the company not been permitted to lay down the pipes along Blackfriars Bridge, they would have been unable to complete a circle of pipes, which they are empowered by Act of Parliament, to lay down. The pipes, which are 6 in. in diameter, will be laid down under the carriage-way, near the footpath, as they cannot be carried along outside it. It was suggested that the pipes might burst, and that if they did so under the pavement on such a crowded bridge, a number of persons might be blown into the river; but in answer to this it was stated that Mr. Haywood, the engineer, had given it as his opinion that there was no danger.

AMERICAN FINANCES AND CREDIT.

COMMENTING on the financial condition of the country in its relation to the Presidential contest, the *New York Herald* states some interesting facts:—In all civilised nations the foreign commerce of a country is the method by which its commercial standing is measured. In this respect Great Britain is and has been pre-eminently the first nation. Her foreign commerce has steadily increased until the enormous figure of 3,000,000,000 dollars has been reached. This result has been accomplished by wise statesmanship and the most liberal support by the Government of all enterprise looking to the extension of British commerce. Besides, the Chancellor of the Exchequer is in constant and daily communication with the leading tradespeople and representative commercial men, attentive to their wants and suggestions, open to instruction, and never attempts to force a policy upon the country against the protest of the commercial body. France, in point of foreign commerce, is the second nation of the world; the annual value of her foreign commerce being now about 1,500,000,000 dollars. The United States have made rapid strides in commerce during the last two decades. Notwithstanding the interruption caused by the rebellion — and our improvement in this respect is remarkable,— our total foreign commerce in 1852 was 422,000,000 dollars, which was increased in 1860, at the outbreak of the rebellion, to 762,000,000 dollars. From that period to the close of the war our foreign commerce passed through many vicissitudes, and one year ran down as low as 435,000,000 dollars. After the close of the rebellion there was a rapid improvement, until for the fiscal year ending June 30th, 1871, our foreign commerce reached a total of 1,100,000,000 dollars. For the fiscal year which closed last June the official figures have not yet been made out, but it is estimated the total will reach 1,200,000,000 dollars, the largest in the history of the country, which, when we consider that this result has been accomplished in the face of virtually hostile legislation, presents an evidence of commercial progress and greatness of which any people may be proud. It is interesting to note the steady increase of railroad mileage there. In 1830 there were twenty-three miles of railroad in operation in the United States; in 1845 there were 2,218 miles; in 1850, 9,021 miles; 1860, 30,635 miles; and in 1871, 60,852 miles. The gross value of the internal commerce of their railroads during the fiscal year ending June, 1871, is stated in round numbers at 15,000,000,000 dollars, greater than the entire foreign commerce of the whole world.

LONDON SCHOOL BOARD.

AT the usual weekly meeting, on the 25th, it was stated that the Works Committee had found it desirable in many cases, not only of sites scheduled, but also of sites which it was proposed to secure by agreement, to call in the aid of an experienced valuer of land before determining on the amounts to be offered or paid for interests in the various sites. In consequence of this, the committee asked the authority of the Board to appoint such a valuer in such cases as they may think necessary.

The authority asked for was at once granted.

A resolution was passed by the Board on the 19th of June last deciding that a competition of four architects should be held for a school to be erected on the Northgreen Sawmills site. As no architects had been communicated with in this case, the Works Committee recommended that the plans be prepared by the architect of the Board, and that the previous resolution be cancelled.

It was explained by Mr. Reed, chairman of the Works Committee, that this would effect a saving of money.

—The recommendation of the committee was approved of.

Since the previous meeting of the Board the Works Committee had considered the reference in which they were instructed to make the necessary selection of officers for the architects' department, and they now recommended that the following be appointed by the Board, at salaries mentioned below, subject to one month's notice on either side:—Chief draughtsman: Mr. T. J. Bailey, salary 200*l.* per annum (appointment to date from September 18, 1872). Senior draughtsmen: Mr. Jas. Howes, salary 140*l.* per annum (appointment to date from September 20, 1872); Mr. A. Edwards, salary 140*l.* per annum (appointment to date from September 30, 1872); and Mr. Edward Rake, salary 120*l.* per annum (appointment to date from September 1, 1872). Junior draughtsmen: Mr. Arthur Harland, salary 80*l.* per annum (appointment to date from September 17, 1872); Mr. James Lackie, salary 80*l.* per annum (appointment to date from September 1, 1872); Mr. W. A. Green, salary 80*l.* per annum (appointment to date from September 17, 1872); and Mr. A. W. O. Burton, salary 80*l.* per annum (appointment to date from September 17, 1872). Writing clerk: Mr. George H. M'Farlane, salary 80*l.* per annum (appointment to date from September 1, 1872).

THE ADMIRALTY AND BUILDING AT GREENWICH PARK.

WITHIN the last week or two, a strong feeling has been manifested in Greenwich against a proposal by the Commissioners of the Admiralty to let, for building purposes, the land adjoining the vicarage, known as Park Lodge, and which, it appears, was given by Act of Parliament for the use of the seamen of Greenwich Hospital; but which, it is now contended, it is illegal to build upon, inasmuch as it is "dedicated to the people by a king, in holy commemoration of the death of his queen." The land in question immediately adjoins the park, and forms part of what is known as the Greenwich Hospital lands. Last week, two special meetings of the vestry were held, for the purpose of protesting against the proposals of the Admiralty Board. At the first of these meetings the Rev. Canon Miller, vicar of Greenwich, presided, and the proceedings were of an excitable character, in consequence of a per-

sonal altercation between the vicar and Mr. Pook, solicitor, which induced the former to leave the chair, and the meeting broke up without coming to any decision. It appears that the vicar's house is built upon land immediately adjoining the land now proposed to be built upon, and that he has since entered into an agreement with the Admiralty for about 20 ft. of land to be added to his premises. At the meeting in question the vicar observed that, as the land had been given by Parliament for the use of the seamen of the hospital, there could be no question that it was at the disposal of the Lords of the Admiralty. This was denied by Mr. Pook, who added, that the vicar's house had no right to have been built there, and that the addition of the 20 ft. more to his premises was the result of a hole-and-corner movement. Hence the vicar's leaving the chair, and the breaking up of the meeting. At a second meeting held, which was numerously attended, a more unanimous feeling against the proposals of the Board of Admiralty prevailed. One of the churchwardens presided, and several speeches were made strongly condemning the attempt to build upon the land. One of the speakers said it was the bounden duty of the inhabitants to prevent it, and they should do all they could to get the land thrown into the park. He added that it was purely a question of Greenwich Hospital *v.* The Public, and it was quite clear the Hospital must give way. A resolution was proposed and carried to the effect that the vicar, churchwardens, and certain members of the vestry seek an interview with the Lords Commissioners of the Admiralty, to protest strongly against the proposed leasing for building purposes of certain land adjoining the park, the same being contrary to former action, and opposed to the wishes of the people of Greenwich.

THE COAL AND IRON TRADES.

THE prices of coal and iron seem now to be clearly pointing to a fall. Coal and iron ore are becoming more abundant at the northern furnaces; and at Wolverhampton on Wednesday in last week the tone of the market was decidedly in favour of purchasers. Bars were offered at a reduction of 3*l.* per ton without finding buyers. The unprecedented prosperity of the malleable iron trade in Lanarkshire, however, is threatened with a sudden collapse in consequence of the continued rising of the prices of pig iron and coal, and the slackness of orders this month. Two large works have already given their men the usual fortnight's notice. With regard to coal, it may be stated that the last alleged rise of 3s. 6d. per ton appears to have been a dodge on the part of some of the agents who have bought heavily.

There is much foreign competition, both in iron and in coal. Belgium is making girders far under our lowest quotations; and Germany has just secured a good order for railway tools which had been previously offered to firms in this country. Our coal-owners and iron manufacturers seem to be killing the gooseb hat lays their golden eggs, and, while plundering the public unmercifully, they are destroying their own business.

A Dumfries coal-merchant writes, pointing out what appears to him to be the chief, if not the only, cause of the present extraordinary state of the coal trade. Speaking of the high rate of wages, he remarks that the men have only got 9d. per ton more than they had last year, when coal was 6s. a ton. Since that time coals have risen enormously. "Last month," says our correspondent, "I was charged 17s. per ton nett at the pits, and the carriage costs 4s., making in all 21s. Thinking that a change might soon take place, I sold the same coal for 20s., thus losing 1s. per ton, and all my labour. More recently I have had an intimation that 2s. 6d. has been added to the price at the pit." It seems a little foolish to sell coal at a loss. The fact of his doing so, however, is not quite pertinent to the argument: so we pass on.

"Do the coal-masters," he asks, "pay more than they did formerly for the leases of their pits? No; for I know to a certainty that they have leases for fifteen, twenty, and thirty years, and I should like to know how many of these expired within the last twelve months, and if any were increased in price on renewal. Again, the price of coal at the pits in September, 1871, was 6s. per ton, less 2½ per cent. for cash in a month. Out of this sum they paid the lord of the manor, the colliers, and the whole working expenses. They were very anxious to take orders at that price: so, I presume, they made a profit. Turning now to this year's trade, I add 9d. for the increase of wages, which gives 6s. 9d. per ton. This 9d. is all that the coal-masters can show as a reason for the present extravagant rates. They must, therefore, be making profits of 10s. 3d., 12s. 9d., and 13s. 9d. on the three qualities of coal which they sell at present at 17s., 19s. 9d., and 20s. 6d. Moreover, the 2½ per cent. discount which we formerly got for cash payments is not now allowed, and that itself must represent a considerable sum."

A joint-stock company is now being formed in Titusville for the manufacture of pig iron by means of petroleum oil in place of coal. At present rate the fuel for making a ton of charcoal iron costs 17 dollars, while it is calculated that the oil for making an equal quantity of iron would cost only 7 dollars. The Lake Superior ore can be laid down at comparatively little cost almost at the mouth of the oil-wells, which will thus be invested with a new and increased value.

LEICESTER SCHOOL BOARD.

THE Architects' Committee submitted a list of the tenders received for the erection of the school on King Richard's-road; and recommended the Board to accept the lowest tender, namely, that of Mr. Thomas Bland, subject to its being sanctioned by the Education Department.

The committee also recommended that the school be erected with hollow exterior walls, the nature of the locality making them in this instance especially desirable.

	Extra for hollow walls.	Amount of tender.
Brown	£169 0 9	£8,982 1 0
Fast	133 7 0	7,720 0 0
Foister	109 0 0	6,790 0 0
Winkles	—	6,738 0 0
Hutchinson & Son	98 0 0	6,665 0 0
Loveday	100 0 0	6,574 0 0
Osborne, Brothers	73 0 0	6,507 0 0
T. & H. Herbert	90 0 0	6,349 0 0
Neale & Son	135 0 0	6,095 0 0
Bland	120 15 0	6,060 0 0

These tenders do not include the cost of the internal fittings. The report was adopted. The Architects' Committee recommended Mr. Jackson's plans to the Board (subject if necessary to some minor modifications) as the most suitable for utilising the site in Oxford-street for 876 children, in accordance with the resolution of the Board of August 19th, 1872. This recommendation was also approved of.

SIR JOHN BOWRING ON THE VALUE OF STATISTICS.

IN course of the paper read by Sir John Bowring, at the last Congress of the Social Science Association, he said:—It may be doubted whether there is any topic of social or individual interest which is not in some way or other to be tested by statistical and economical results; at all events, it may be contended that when such results are attainable they will tend much to the elucidation of any and every controversy. Every argument is strengthened if it can take a mathematical or arithmetical shape, and the tendency of all inquiry is to subject every contingency to some law of harmony or order. The great controversy of the day is, whether any event in the widest regions of space or time does escape, or can escape, from the irresistible despotism of universal law. Thoughtful men are beginning to test the great workings of Providence, once deemed inscrutable, as they would test the working of any instrument produced by the hands of man. If they look at the machinery of a watch they would judge of its excellence from the absence of aberration, that it went well, and recorded the progress of days or hours, or minutes or seconds, with unvarying accuracy. If it failed, they would properly deduce from its failures the imperfect hand of the watchmaker. It is not necessary that they should be personally acquainted with the watchmaker to assist the conclusions at which they would arrive; nay, it would be utterly impossible for them to trace the various parts of the complicated work to their origin; and so in the infinite variety of the machinery of creation. May not the study of statistics have a moralising effect upon public opinion? May it not influence sovereigns and legislators when the cost of great national evils, and sometimes of great national crimes, is taken into account? Ask, for example, the returns of the waste of human life, of the sacrifices of money, which we owe to the devastations of war,—though these sacrifices are not confined to statistical tables, but ramify into all the researches of human suffering; and it is hoped that the startling facts in figures which have been published connected with international hostilities may not be deemed inappropriate, as they certainly cannot fail to be instructive. It is obvious that a reference to a friendly and well-constituted tribunal for the settlement of matters which have so frequently led to the "outslip of the dogs of war," could not but greatly serve the interests of economy and commerce: nothing can be more opposed than war to the cultivation of brotherly affections nor to the extension of trade. Civilisation has done something,—much less than it ought to have done,—for the suppression of internecine quarrels; it has more effectually broken down the barriers which separated town from town, district from district, province from province, which are now almost universally allowed to trade with one another. Every reason which justifies the removal of local restrictions applies to the custom-house codes of nations; and if not for the adjacent present, we may anticipate for a remoter future the abolition of tariffs grounded on a supposed hostility of interests,—a hostility which has no foundation in fact.

PRIVATE DWELLING-HOUSES AT THE VIENNA EXHIBITION.

IT has been already noticed in the newspapers that at the Universal Exhibition to be held in Vienna in 1873 the private dwelling-house will have the importance of forming a group to itself. This group has been destined to help to solve one of the most important questions of social science of the day. Its object is not to exhibit a collection of ethnographical objects, neither is it to show how most of the private dwelling-houses *are* built and arranged in different countries; but to show how the private dwelling-house *can* and *ought* to be built in order best to fulfil its purpose, taking into consideration the climate, local circumstances, and mode of life of the different peoples, as well as their wants and habits.

One very common error, for instance, hitherto, in undertakings with the special object of providing houses for working men, has been the construction of huge nests of brick and mortar, in which there is no private ownership beyond the two or three rooms enclosed within a separate door, and a right of way down a common staircase. Whatever may be the architectural or economical advantages of this kind of building, it has one fatal fault,—it is not liked, and there is no reason to suppose that it ever will be liked, by the persons who are intended to benefit by it. It is very doubtful whether the flat system has any future in London, even for the richer classes. The experiment begun in Victoria-street has not been often repeated.

The group destined to represent the private dwelling-house, firstly, by models, drawings, and finished buildings; and, secondly, by drawings, models, and examples of thoroughly furnished apartments, at the Vienna Exhibition will show the rooms, the kitchen, the cellar, &c., with all the requirements of housekeeping and all most approved arrangements, as a whole and ready for immediate use; and thus it is hoped present to the visitor an arrangement which cannot by any other means be exhibited in so complete or clear a manner, and which imagination can never represent to itself.

This Exhibition will enable the architects of all civilised nations to exhibit the private dwelling-houses which suit best the climate and habits of their country, and also enable visitors who give their attention to this problem to make instructive comparisons, and to adopt the arrangements which may be suited to their own country and customs. It is intended that the houses exhibited, besides being fully and completely furnished and decorated, shall be likewise, as far as practicable, inhabited.

One particular feature of prominent interest to English manufacturers and exhibitors deserves to be specially noticed in connexion with this group. Iron constructions are almost unknown in Austria, and it is believed that if introduced by enterprising firms (and such are not wanting in England) they would meet with a ready sale. Even a very profitable investment might be made by erecting several of these iron houses previously to the opening of the Exhibition; for it is a well-known fact to residents in Vienna that at present there is not enough accommodation for the resident population, and that in consequence rents are enormously high.

By the exhibition of these iron constructions the manufacturer may derive a double advantage. In the first place, he will be receiving rent for the houses whilst they are inhabited, and, secondly, it will, perhaps, do more to convince Vienna capitalists and building societies of the

practicability of iron houses, than all the advertisements in the world.

The houses which are mostly required at Vienna, are not those enormous ten and twelve-story structures which are familiar to every one who has visited Continental cities. The most urgent want of the people there is a good *transportable* dwelling for working men, containing from two to four rooms, and others with one room and a kitchen, only suitable for a man and wife. Such buildings are almost unknown in Vienna, and considering that the town has a very large labouring population, they are as much needed as elsewhere. To men employed in large manufactories a dwelling of this kind would be specially acceptable, for, on account of want of good accommodation, and the very high rents which prevail in a densely-populated district, the Austrian artizans and mechanics have often a distance of three or four English miles to walk morning and evening. Summers and winters in Austria are more severe than in England, and hence the greater need of a decent dwelling nearer the man's daily work. Many of the manufactories there have plenty of spare ground which they now appropriate to depositing rubbish, but which,in many instances, would be available for the erection of constructions as heretofore suggested.

Ordinary building materials are very dear at Vienna; bricks cost from 30 to 35 florins (50s. to 60s.) per 1,000, and other materials are in the same proportion. In the interest of working men and the poorer classes, the co-operation of manufacturers in England, France, and elsewhere, in the direction above indicated, is earnestly solicited by the Austrian people.

CIVIL ENGINEERING AND ARCHITECTURE AT THE VIENNA EXHIBITION.

A CORRESPONDENT from Liverpool asks to be informed as to the works admissible. The following extract from the programme will answer the inquiry, and probably be useful to others:—

"CIVIL ENGINEERING, PUBLIC WORKS, AND ARCHITECTURE.

(*a.*) Building materials; processes and apparatus for quarrying, brick-making; iron girder work; preparation and preservation of wood; artificial stone, terra-cotta work, &c.

(*b.*) Materials and appliances for foundations (pile-drivers, screw-piles, cofferdams, caissons, pneumatic and diving apparatus).

(*c.*) Contrivances and tools for earth-works (excavators, dredging machines, apparatus for raising, carrying, and transporting earth and materials).

(*d.*) Materials and apparatus used for roads and railways (road rollers; railway superstructure, switches, crossings, turn-tables, traversing-tables, inclined planes, lifts; pneumatic and other modes of propelling; water stations and their apparatus, railway station buildings of all kinds, and systems of railway signals).

(*e.*) Hydaulic engineering works, excluding sea works (river works, canal works, dikes, locks, dams, &c.).

(*f.*) Models and plans of viaducts, bridges, and aqueducts, &c.

(*g.*) Plans, models and drawings of public buildings, dwelling-houses, barracks, penitentiaries, prisons and hospitals, schools and theatres, labourers' cottages; apparatus for lifting and moving heavy weights in buildings, as lifts, &c.; plans and models of cheap dwelling-houses; tools and implements of artizan builders.

(*h.*) Apparatus and inventions for health, comfort, and convenience in buildings (for lighting, water supply, drainage; water-closets, lightning conductors, &c.).

(*i.*) Agricultural engineering; plans for culture, fencing, draining; farm buildings; buildings for cattle breeding; stores, stables, manure tanks, &c.

(*k.*) Industrial buildings; spinning-mills, weaving-mills, grinding-mills; distilleries, breweries, sugar manufactories; warehouses, saw-mills, and docks, &c.

Finished buildings, models, and drawings of farmhouses of the different nations of the world."

Let us add that the buildings to which architectural drawings, &c., relate must have been designed, commenced, or finished since 1863. Architectural drawings and designs which have gained the Travelling-Studentship of the Royal Academy, the Gold Medal of the Royal Academy, or the Soane Medallion of the Royal Institute of British Architects, within the preceding five years, will be considered admissible without other question than that of sufficiency of space. It is desired that each architectural work should bear the name of the architect who designed, as well as that of the artist who drew or painted it.

Gas Referees. — Professor Tyndall, Mr. Augustus G. Vernon Harcourt, and Dr. William Pole, have been appointed gas referees under the City of London Gas Companies Acts, 1869, for one year, at a salary of 200*l.* each.

SEWER-GAS AND LEAD PIPES.

SIR,—I agree with your correspondent, "A Plumber," at page 750, in his advocacy of pure *versus* adulterated lead. I cannot, however, agree with him when he states that "iron soil-pipes are corrosive and offensive," for I consider that, especially where hot water flows through them, iron soil-pipes, if properly put in and of a proper size and thickness, are preferable to lead. It is an every-day occurrence to come across old lead soil or waste pipes with holes eaten through them, but the same as regards cast iron is a *rara avis*,—at least in my experience. When iron pipes are put in only about 1-16th of an inch thick on one side and 1-6th of an inch on the other side, we often find them split up, rusted, and broken; but then such thin iron pipes should not be used, especially for soil-pipes. Cast-iron soil-pipes, ¼ in. thick, and 4½ in. or 5 in. internal diameter, give great satisfaction if properly fitted up and supported, and also ventilated. As to the ventilation of soil-pipes, I think it not far off the mark to say that in ninety-nine cases out of every hundred the soil-pipes are *not* properly and efficiently ventilated.

ANOTHER PLUMBER.

LANDS THAT WANT HANDS.

SIR,—I am pleased to read in the *Builder* that the Land Question has been revived. I would beg to say that a plan something like "E. G.'s" proposal was started about twenty-four years ago, in this way:—An active friend of the working class, an M.P., started a land scheme, in shares, for working men, at four shillings per month. When there was a certain sum in hand, inquiry was made, and part or the whole of an estate was purchased; then the land allotted in two, three, and four acres each, with houses of three and four rooms: a fair price was fixed upon them, and, when ready for occupation, the members who had paid certain sums in subscription, drew by ticket. After some time, three or four estates were thus established. One estate, that only employed three or four hands, was divided so as to locate thirty families, but, through opposition, the scheme failed.

G. STUBBINGS.

NEW ZEALAND ADVANCING.

ON the 13th of April last, a stream of emigration commenced to flow from the United Kingdom to this important colony, sometimes spoken of as the Great Britain of the Southern Hemisphere, that is destined to exercise the most important influence upon both colony and mother country. On the date named the ship *Shehallion* left the port of London, with a large number of carefully-selected navvies and agricultural labourers on board, destined for Wellington, the capital of New Zealand, whence they were conveyed to Picton, in the province of Marlborough, to commence operations in the construction of a system of railways to be made in New Ulster, or North Island, and in New Munster, or Middle Island, the main portions of the colony; New Leinster, South or Steward Island, small and sterile, uninhabited and uninhabitable, is left out of consideration.

The New Zealand railways are to be made by Messrs. John Brogden & Sons, under contracts with the Colonial Government, and five contracts have already, as a commencement, been entered into between the firm and the Government. There is no surplus labour in the colony to be relied on for the execution of such extensive and important works, and Messrs. Brogden have accordingly to send out their own workpeople. Navvies and agricultural labourers are not of the classes that have a balance at their bankers, and the employers are necessitated to pay the passage-money and provide the clothing outfit of most of the emigrants, taking promissory notes for repayment of the amounts thus advanced from wages earned in the colony in Messrs. Brogden's employment. The conditions under which the labourers engage are fair and liberal on the part of the employers, and the engagement indicates their possession of faith and courage in no mean degree, as must be manifest from the fact that they will have invested, on the security of these promissory notes, from 30,000*l.* to 40,000*l.* for passage-money and outfits, before the "first sod" has been turned in the colony. The first ship has been followed by the *Halcione*, also for Wellington; the *City of Auckland*, destined for Auckland; the *Ballarat*, for Port Napier, Hawkes Bay; the *Bebington*, for Otago; the *Lady Jocelyn*, for Canterbury; the *Christian McAusland*, for Otago; last week the *Chile*, for Port Napier; this week, the *Jessie Readman*, for Wellington; with the *Zealandia* to follow for Port Bluff, in the Province of Southland, and other ships afterwards for that and other ports. The contribution already made by Messrs. Brogden to the population of the colony, or the emigrants that they have despatched thither from London, numbers no less in men, women, and children, than 1,300 souls. The employers are required by Government to include a certain proportion of females in each batch of emigrants, but the obligation to send an absolute equality in numbers of the sexes would be to impose a burden too heavy to be borne, and the disturbing element of an inequality in the number of males and females applies in this, as in all other instances of emigration, the males being always in excess, more or less. The proportions in 932 emigrants sent out by the first seven ships were 660 males to 272 females, or roughly as 7 to 3. Applications for employment are made from all parts of the country, and not a few Warwickshire agricultural labourers have taken advantage of this fortunate opportunity for bettering their condition. The *Chile*, that sailed last week, took a number of emigrants from Cornwall and Dorsetshire. The natural probability, as we learned from the ship's doctor, is that three more names will be added to the passenger roll before the ship reaches Port Napier. The additions will be of natives of the somewhat extensive parish of the Pacific. Advice has been received of the safe arrival of the *Shehallion*; and the other ships, it may be hoped, have either reached their respective ports, or are pursuing their peaceful and pleasant voyage.

The qualifications for employment on the New Zealand railways are strength and health, a certain maximum age, and the being, or having been, a *bond fide* navvie or labourer. The emigrants are guaranteed not less than two years' work at such wages as may be agreed on from time to time, or as may be settled by some person to be appointed by the Governor of the colony, but such wages are to be not less than five shillings per day of ten hours. The employers take power to retain a fifth of the wages of the employed for repayment of passage-money and outfit, but the men may repay the amounts of their promissory notes as quickly as they please, and when these have been fully paid they may work where and for whom they choose, for such wages as they can command. It need scarcely be said that from England, with its present rates of wages and prices of provisions, to New Zealand, with 5s. a day and beef and mutton at 2d. and 3d. a pound, promises to be a stride in the direction of comfort. The ship outfit of the emigrants is provided by Government, to be repaid if advanced by Messrs. Brogden; it includes the necessary mattresses, bed-clothes, pannikins, and other utensils, which, much to the satisfaction of the emigrants, remain their property on arrival in the colony. In the first instance, the immigrants will be lodged in the Government barracks, from which they will move to the locality in which they are to be employed, and be lodged in roomy and comfortable wooden huts, that are being provided by Messrs. Brogden. These huts are to be portable, and as one section of a line is finished, they will be taken to pieces and transported to other localities, where they will be re-erected.

The lines of railway to be first constructed by Messrs. Brogden, have their termini at, or near, ports widely apart from each other, from Invercargil, near the southern extremity of New Munster, in about 47° S. lat., to Auckland, near the northern part of the mainland of New Ulster, 37° S. lat. Three of the lines contracted for are in the middle island, and two in the northern island. The three southern lines are from Invercargil, Southland, to Mataura, 42 miles; from Dunedin, Otago, to Clutha, 34 miles; and in Cook's Strait, from Picton, Marlborough, to Blenheim, 19 miles. The lines in the northern island are from Auckland to Waikato, 41 miles, and a short line of 8 miles from Wellington to Hull. The lines aggregate about 150 miles, and the five contracts about 512,000*l.*, the average cost being a trifle over 3,500*l.* per mile. One line of 42 miles, the Invercargil and Mataura, will only cost 2,047*l.* per mile. These figures, however, exclude rails and rolling stock.

The lines now contracted for are only a small beginning of a great enterprise pregnant with stupendous material and moral results. Experience so dearly bought at home, in the construction of duplicate lines and unprofitable extensions,

in the elaboration of a railway system that is "a maze without a plan," will doubtless be avoided in New Zealand, where the system of railways will be a system worthy of the name. The colony is rich in natural productions; in forests primeval of valuable timber; in farm produce, flocks, and herds; in fertile vales and succulent pasture-grounds; in mines, easily accessible, of coal, iron, copper, gold, and other mineral and metallic treasures. The intention of the Government, in the first instance, is to carry the railways into, and to tap, the mining districts. The Auckland and Waikato line will pass through a district in which excellent coal abounds: the Dunedin and Clutha lines takes the direction of the gold regions in the valley of the Clutha, and it is the same with the other lines laid out. Future contracts, it may be expected, will be for lines from Clutha to Mataura, which will provide continuous railway communication between Invercargil, Southland, and Dunedin, Otago. A line is in contemplation from Nelson to Westport and Greymouth, in the province of Nelson, and embracing extensive coal fields; another is projected, we believe, from the Wellington and Hutt line, through an exceedingly fertile country to Port Napier, in Hawkes Bay. The introduction of railways will hasten the advent, if anything can do so, of Macaulay's native—a native New Zealander, in the same sense as Stanley is a native American,—who is to perform the sketching feat on the ruined arch of London Bridge. Centuries will probably elapse before St. Paul's and London Bridge fall into ruins, if they are ever allowed to do so, and generations may possibly have to come and go before the railway system of New Zealand is completed, considering its great extent, and the present sparcity of its population. It is not within the power of one generation to construct a railway system to permeate the necessary points of regions that are more than 1,000 miles in length, with a mean breadth of about 200 miles, and enclosed in a coast-line of 1,000 leagues. As regards the present population of the colony, its numbers forbid, if not render impossible, a very rapid construction of railways. In 1871 the colony had only 256,167 white inhabitants and 38,540 aborigines, or, together, less than a tenth of the population of London; so that a heavy "passenger-traffic" on New Zealand railways will be impossible for yet awhile. Nothing can be more certain, however, than that the railways and population will act and react upon each other. As the resources of the country are opened up by railways, population will be attracted, and as population is increased and dispersed, more railways will be required. A few generations hence will doubtless see a wonderful modification of the contrast now presented between Lancashire and Cheshire, with a population of 1,082 persons to the square mile, and New Zealand, with no more than the odd two persons for each of its 122,000 square miles of territory.

The streams of emigrants to New Zealand, and the important works they are sent thither to execute, are doubtless sources of satisfaction, but the good is not unmixed. A large number of the applicants for employment are ineligible, being either loafers, broken-down men, or deficient in physical stamina. There is not any prudery exercised in scrutiny of the moral character of applicants, but the line must be drawn somewhere; and they may be roughs, but they must not be known as rogues. The exodus brings Goldsmith's lines unpleasantly to mind. Many of the emigrants are really of the "bold peasantry, their country's pride." They leave for the good of the colony, and for their own good, but not for "their country's good" in the sense in which the phrase is sometimes used. They take with them strong arms, and iron thews and sinews, the rogues and vagabonds, the aged and infirm, being all left at home to prey upon, or to be provided for by, the workers that remain.

A number of single young women accompany the emigrants, professedly to take "domestic service" in the colony. In numerous instances it is expected that an interesting ceremony will be performed soon after arrival in the colony, between certain of the gallant young bachelor navvies and the fair spinsters that accompany them. The single women, by going out as such, save ten pounds on their passage-money. They are under the superintendence of a matron on the passage out. The single men are berthed in the forecastle and fore-hatch, the married couples in the middle hatch, and the single women in the after-hatch. The arrangements for the comfort of the emigrants, as we saw them in the *Chile*, had nothing that could be complained of, and left little that could be reasonably desired.

PARIS PROMENADES.

THE view we give of the *café-restaurant* on the Ile de Bercy, in the Bois de Vincennes, is from a recently-published part of the fine work, "Les Promenades de Paris," now in course of publication by M. J. Rothschild,* and to which we intend to make early reference.

This restaurant is constructed in wood, after the fashion of a Swiss *chalet*, and covers an area of 525 mètres. It was bought for the purpose by the City of Paris, at the Universal Exhibition of 1867, and cost, when erected in its place, 1,600*l*. Around the *chalet* there is an extensive platform, planted with trees, to receive the tables for customers.

OFFICES OF THE LIVERPOOL UNITED GASLIGHT COMPANY.

A HANDSOME and commodious building has been completed for the Liverpool United Gaslight Company, in Colquitt-street. The style is Franco-Italian Renaissance.

The building comprises, on the principal or ground floor, a general office, 65 ft. by 75 ft., placed at the rear, lighted on three of its sides by large, lofty windows, and, in addition, by a dome-light over the centre of the room. This office is intended for the transaction of general business with the public, and access to it is obtained from the principal entrance. The general office is fitted up with a range of counters on the two sides, and at the end opposite the public entrance, the centre part of the room being intended for the public use as a waiting-hall, whilst the space behind the counter is fitted up with desks and seats for upwards of 100 clerks, collectors, and other officials. Contiguous to the general office, and placed conveniently for access from the chief entrance, is the manager's private office, adjoining which, within the general office, is the office of the chief clerk and his assistants. In the basement beneath the general office are two large strong-rooms, fitted to receive the books and cash-safe. A hydraulic hoist is provided to raise and lower the books, safes, &c., to and from the general office to the strong rooms. There are also beneath the general office a cloak-room, extensive lavatory accommodation; large stores for fittings, and a kitchen and dining-room for clerks. The whole of the basement of the building is lighted by external windows, which open into wide areas, affording means of access from the yards and workshops to the basement offices and the dining-rooms. The front part of the building comprises a basement story, containing offices and storerooms.

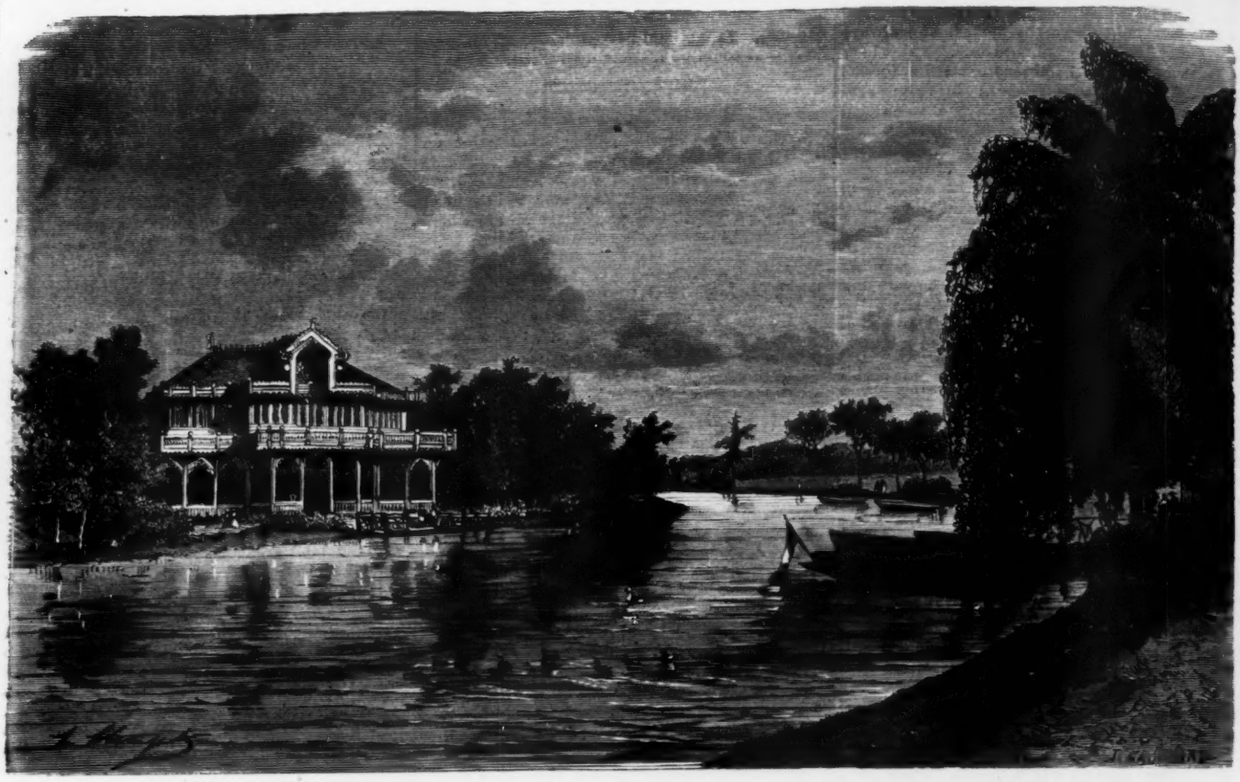
On the ground-floor are two show-rooms for fittings, one on each side of the main entrance, with a corridor of communication and manager's rooms. From the corridor access to the yard is obtained at each end of it, and the chief staircase to the board-room and engineer's offices on the floor above is approached from the entrance-hall. A workmen's staircase is also placed in this part of the building, from the basement to the upper floor, near the engineer's office. On the first floor are the board-room, ante-room, engineer's office, and engineer's clerks' drawing-office and plan-room, forming a suite of rooms the extent of the Duke-street frontage, and behind these rooms is a corridor of communication; from the corridor access is obtained to the staircases, and a photometer-room and engineer's room for experiments. Above the suite of rooms last described is an attic story to be used as stores and offices, and for storage of books and documents. The building has a frontage towards Duke-street of over 120 ft.; the depth from front to back is nearly the same. The Duke-street front and its two flank return walls are built of Cefn stone. The front comprises a central portico in coupled fluted columns, with responds, and a flight of six steps to the main entrance door. The building has its ground-floor about 4 ft. above the street level at the centre. The wing walls to the steps cross the area towards Duke-street, and the area is divided from the street by a parapet wall and balustrade, with handsome gas pillars and lamps on the chief piers.

Above the basement, the front is divided horizontally into two orders, or stages, each having continuous surbase and dado, and entablature, the upper order being surmounted by a bold cornice, supported on consoles, which are accentuated over the pilasters by being repeated there. Above the main cornice is an open balustrade parapet, broken in the centre by a large dormer window, carried to the height of the main ridge, and flanked by shafts on the pedestals of the parapet. Similar shafts are placed on the angles of the parapet, and they contain flues for ventilating the different rooms. The ground-floor has, on each side of the entrance, four square-headed windows, with boldly-moulded architraves, divided by pilasters, the intermediate wall-piers being rusticated. The base and entablature of the pilasters are continued along the front and flank walls, and thus mark out the ground-story. The division of the first floor is similarly arranged: its windows have semicircular archivolts, enriched by carving. The centre window over the main entrance is similar in character, with side-light, forming a Venetian window. The capitals of the fluted pilasters of this story serve as imposts to the archivolts, and a moulded and carved string, corresponding with them, is continued on all the wall-piers of the front and flank of the building; and the pilaster, dado, and base are similarly continued, excepting that in the window-openings the dado is filled in with balusters. The same line of base is broken round the portico in the form of a balustrade, with pedestals and terminals at the angles, forming a parapet to the flat over the portico, which may be approached from the central window, which opens to the floor. The building is of a substantial character, and, with the exception of the Duke-street front and its flank, no attempt at embellishment has been made to the exterior of the building.

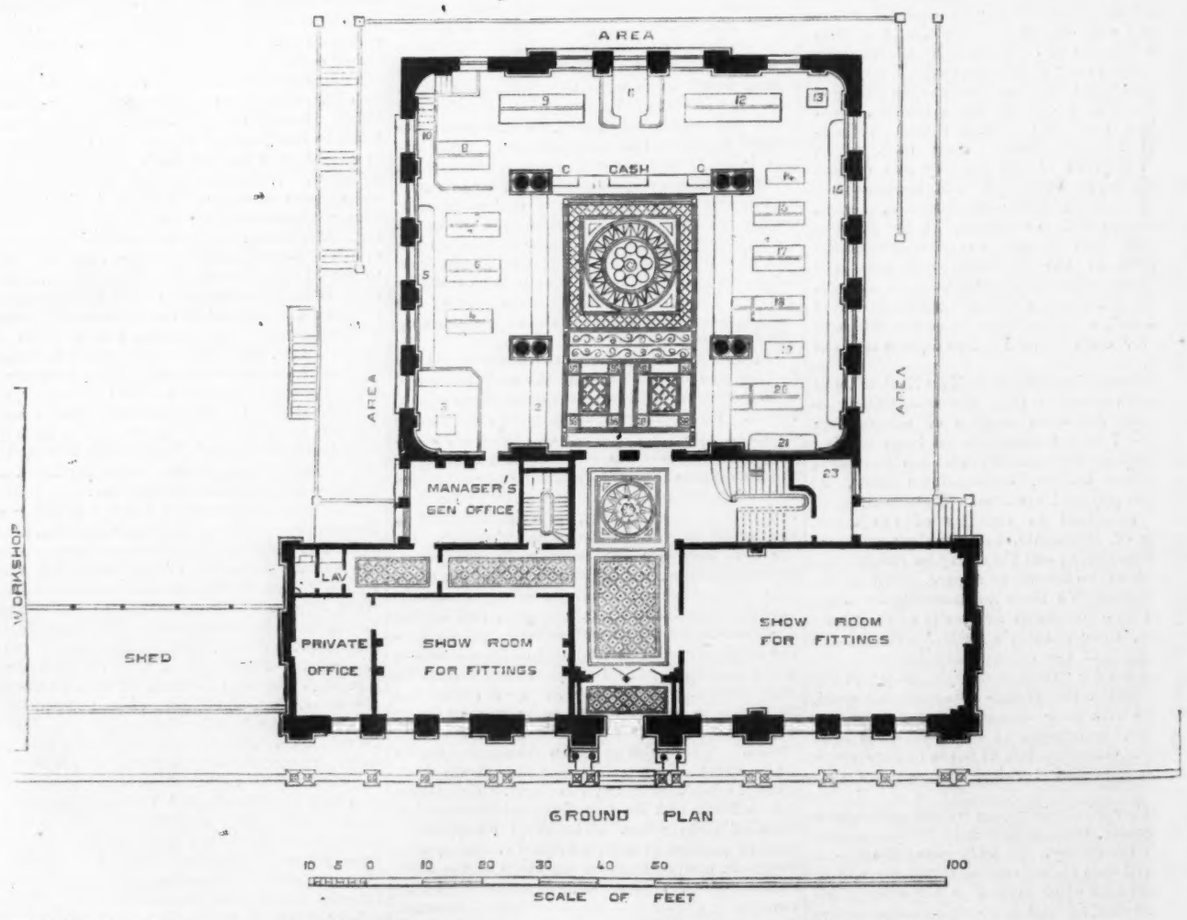
Internally, the general office has a richly-panelled ceiling divided into compartments by moulded beams in plaster work. The centre and largest panel has within it a dome, 17 ft. diameter, filled with stained glass divided into sections by ornamented ribs. The drum of the dome is panelled, and busts of life-size figures are placed beneath the ribs of the dome, which springs from the flat of the ceiling by an enriched cove. A ring of triplet gas-jets encircles the dome at its base. The ceiling is supported by eight Corinthian columns of polished stone, fluted, each with its pedestal 26 ft. high placed beneath the junctions of the main ceiling beams in couples, and on the walls are corresponding pilasters. The windows on the three sides of the room have circular heads, and their arches spring from a continuous enriched impost moulding. The desks, counters, and other fittings are of oak of a serviceable character, and in design to accord with the style of the building. Each desk is in communication with the manager's office by a bell-signal on the atmospheric system. The apparatus was furnished and fitted by Messrs. Barr, of Leeds. The painted decorations of the room, and of the building throughout, are purposely of a quiet subdued character, and subordinated to the purpose for which the building was designed. The floors of the halls and corridors are of tiles. The building is heated by warm water, the apparatus being furnished and fixed by Mr. J. Combe, of Glasgow.

The general contractors for the building are Messrs. Jones & Son, of Pleasant-street, Liverpool. The undernamed contractors have executed the various branches of the work for them, viz.:—Messrs. Wells & Son, the masonry; Mr. J. Hook (the late), brickwork, &c.; Mr. Thomas Jones, the plasterers' work; Mr. Radcliffe, the plumbers', glaziers', and painters' work (all of Liverpool). Messrs. De Bergue, of Manchester, furnished the iron girders; Messrs. Chatwood, the safes, &c. The tiling of the ground-floor was done with Maw's tiles by Messrs. Rutter, Powell, & Co., of St. George's-crescent; and that on the upper floor with Minton Taylor's tiles, by Mr. R. G. Powell, of Duke-street. The wrought-iron and brass work, and the chief gasfittings, were furnished by the Midland Art Metal Works Company, of Coventry; the hydraulic hoist came from Messrs. Richardson & Boyd, engineers, of Preston. Mr. T. S. Trumble, of Liverpool, did the internal painting and decorating. Mr. J. Kitchin acted throughout as the clerk of the works. The building was designed by the late Mr. Charles Lucy, of Liverpool, and was partially erected under his superintendence. Since the death of Mr. Lucy, the works have been carried out from drawings furnished by Mr. Henry Littler, of Manchester, and under his superintendence the works have been completed.

* 13, Rue des Saints Pères, Paris.

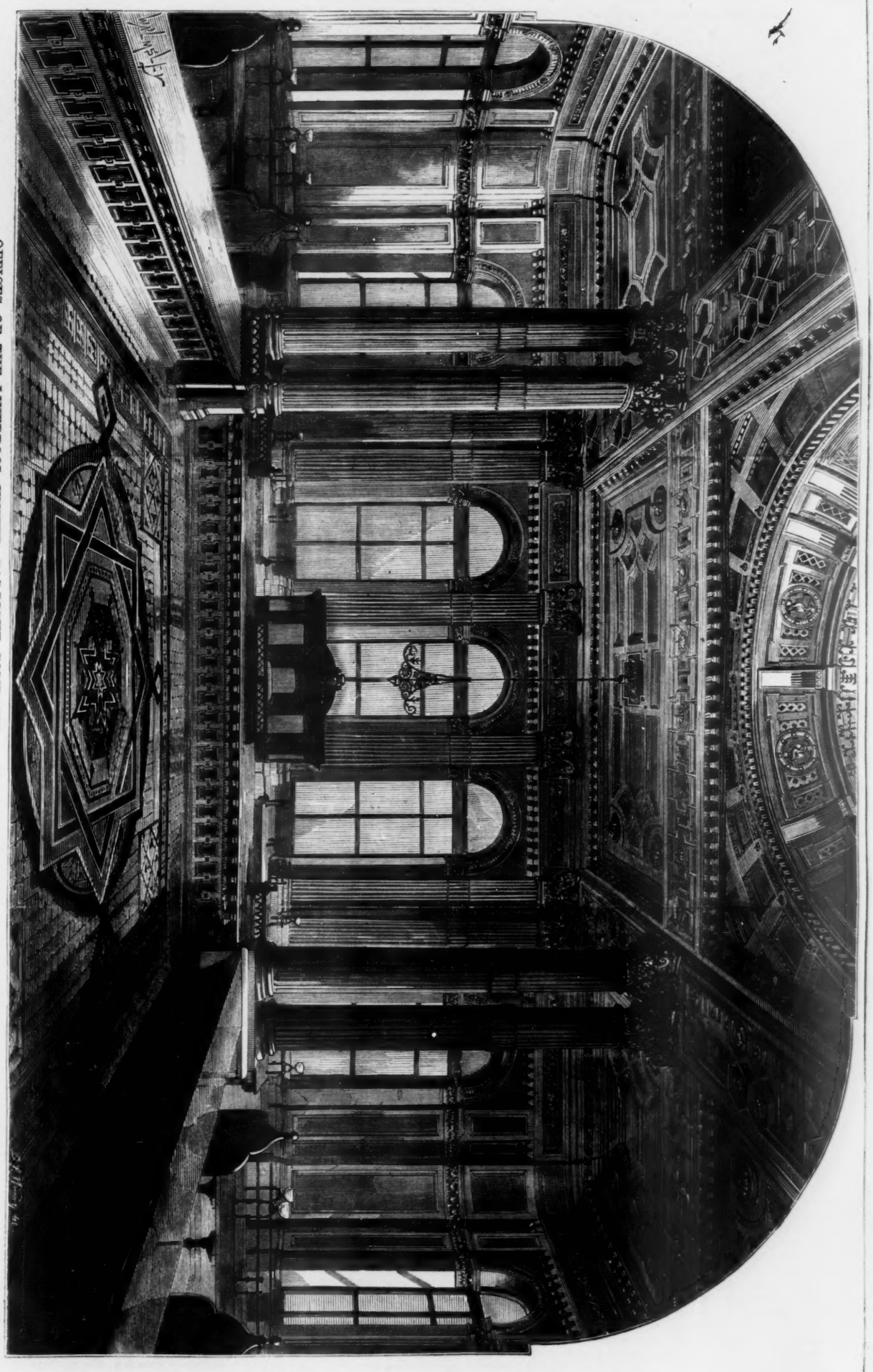


THE "BOIS DE VINCENNES:" RESTAURANT ON THE "ILE DE BERCY."



1. Staircase for workmen.
2. Counter.
3. Chief clerk and his assistants.
4 to 9. General clerks' desks.
10. Staircase to basement.
11. Counting-office.
12. Collectors.
13. Hydraulic lift from strong rooms below.
14. Collectors.
15. General clerks.
16. Collectors.
17 and 18. Fittings bills.
19. Book-stands.
20. Deposit and orders.
21. Book-stand. 22. Staircase to first floor.
23. Room for bad-light men.

OFFICES OF THE LIVERPOOL UNITED GAS-LIGHT COMPANY.—*Plan of Ground Floor.*



OFFICES OF THE LIVERPOOL UNITED GAS-LIGHT COMPANY.—MR. HENRY LITTLER, AND THE LATE MR. LUCY, ARCHITECTS.

SCHOOL DESKS.

SIR,—Mr. Robson does not deal with the question of space, which you raised, when giving us his opinion in favour of Mr. Moss's desk, and as against "convertible" desks, in your issue of the 14th instant. Will he tell us what superficial area is required to seat, say, 100 children in a mixed school, on the plan of Mr. Moss's dual desks, and what space for the like number is required on the parallel-desk plan, in groups, which alone is sanctioned and set forth by the Educational Department of the Privy Council in their "Instructions to Architects"? The question of space is a material matter; because if Mr. Moss's plan necessitates a larger school-room area extra cost is involved in the building, and this, though of little consequence to a school board dealing lavishly with rates, is of great import to the numerous voluntary schools erecting throughout the country. In the one case a thousand pounds may be easily obtained, while in the other the promoters have great difficulty in scraping together a hundred.

Mr. Robson states that "'convertibility' is the very thing which no one now wishes to see adopted." It may be some information to him, as his attention may be concentrated on the school-buildings in charge of great school boards, and to your readers, when I state that, owing to the indefatigable exertions of Archdeacon Hamilton, there has not been occasion, so far, for the formation of a single school board in his archdeaconry,—that of Lindisfarne,—comprising sixty-eight parishes, and extending over the best half of the county of Northumberland, and including Berwick-on-Tweed. In his archdeaconry there are 126 church schools, providing for 11,668 children; and in most of those recently built and now erecting, on the voluntary principle, with the aid of the Privy Council, "convertible" desks are being generally adopted. In my own practice these desks were introduced at the suggestion of the promoters in large schools which I erected in a parish, three years ago, where they have answered so admirably that I am instructed to use them in another school now building in the same parish, and I propose to use them in four other schools building elsewhere. The "convertible" desks, while they in no way interfere with "the best shape and disposition of a school, in reference to its educational use," and with the system of the parallel desks in groups required by the Privy Council, also afford the opportunity of adaptability to school-treats, lectures, concerts, and penny readings, which entertainments, though referred to somewhat slightingly by your esteemed correspondent, are, in rural districts all over the kingdom, not only helps to the education of parents as well as children, but often their only mental recreation in the long, dreary winter evenings. Until, therefore, the Privy Council recognise the dual desks in their "Instructions to Architects," and consequently rescind their present regulations, or more forcible reasons for their use are put forward, I, for one, shall certainly not adopt them for voluntary schools.

FREDK. R. WILSON.

Alnwick.

SANITARY MATTERS.

Sanitary Work on the Thames.—It is somewhat unfortunate, says the *City Press*, that the exact limits of "the Port of London" have not been fixed. At present the term is applied for other purposes to a district comprising about seventy miles of the river Thames, with a mile and a half of the land on each side; but it is obvious that this area cannot be looked after by the staff set forth in the Act, consisting of a medical officer and an inspector of nuisances, so that one of the first things to be done will be the settlement of the boundaries within which the work committed to the corporation is to be performed. Probably the "Port of London" will ultimately be taken to imply the district between Gravesend and London Bridge; and if the efforts of the new authority are confined to this sphere, all that can reasonably be expected may be accomplished. The great thing will be to intercept all infectious diseases at Gravesend, and carry out there such a system of extinction as shall prove of service to the entire metropolis.

Mortality of the Children of Burslem.—The Chief Bailiff of Burslem made what he very justly regarded as a "startling" statement, at a recent meeting of the local Board of Health. Referring to the deaths in the town, he said that out of 787 deaths in the year, 421 were of children under five years of age. This mortality is more than "startling,"—it is frightful. Some of the causes, no doubt, are on the surface,—crowded houses, bad drainage, absence of pure air, improper methods of treatment, and, above all, the employment of mothers at work away from their homes. Some of these causes are capable of removal; but, after all is done that authority can do in this direction, the evil will not be completely met. There must be other conditions, discoverable only by the help of local knowledge, to account for such an excessive loss of infant life.

THE LAND LAWS.

MR. M'NEEL CAIRD, of Stranraer, writes:—If an enterprising farmer erects farm buildings, or labourers' cottages, or executes drainage or other permanent improvements, the law is prompt to punish him for his rashness. The house is no sooner built—the moment the improvement is executed, the law takes the ownership of it from the man who built it, and transfers it without compensation to the landlord. The high priests of the law pronounce the formula, *in ædificatum solo, solo cedit*, and every tenant must bow his head and submit, so potent is this mystic phrase to juggle away the just interest that every man has in the work of his own hands. It contains a dogma of the legal creed which lawyers generally accept with unquestioning reverence. In plain English, it just means, "What is built on the land belongs to the land." It is an assertion, not a principle or even an argument—an assertion not always supported by fact or reason. We are told in God's law, "The sea is His, for He made it," but in man's law the reading is reversed; the house is the landlord's, though he did *not* make it. That is the law of Scotland. Is it reasonable? Is it just? Is the law to cast the balance always and irreversibly against the tenant? Our Yankee brothers have adopted the opposite principle for their unoccupied lands in the West. They call it the homestead law, and it is one main secret of the amazing growth of that great country. Its principle is, "Where a man builds his house and settles, the land shall be his." It is a wise and noble law for an unappropriated country. So, you see, the rules of law are capable of being adapted, as they ought to be adapted, to the circumstances and wants of society.

With the exception of the commons, all the land in this island is appropriated, and our circumstances therefore require a rule regarding buildings different from the American rule, as well as from that which has hitherto prevailed in this country. I hope to see Parliament establish some such rule as this,—what a tenant builds shall be his, and he may take it away unless he is paid for it. That would be just to both landlords and tenants. Our law, in spite of the big words which enshrine its theory of property, is so accommodating as to allow half the houses in this good city of Edinburgh to be sliced horizontally across into flats. In the High-street there may be twelve or thirteen flats built in tiers one on another, each of which may belong to a separate owner, not the owner of the soil. So there can be no inherent difficulty in making the slice a few feet lower down, so that all that is below the surface shall belong to the landlord, and all that is above shall belong to the man who put it there, to be sold (if he be the tenant) when his lease is out to the landlord or incoming tenant, or to be taken away if they do not choose to buy it. If such a rule were established it would lead to the improvements being generally valued over at the end of a lease; for it would not be the landlord's interest to let substantial and suitable buildings be pulled down, and it would be the tenant's interest to make them so. A right to have improvements valued over, when suitable to the holding, is really the practical result; and that, I think, is the result to which Parliament is likely to come.

In examining some statistical papers a few years ago, I came on facts which made a very painful impression on my mind. I have not had any opportunity of lately verifying the notes which I then made, but according to these, there were in one county—the wealthy county of Ayr—more than 18,000 families, not fewer probably than 80,000 persons, living in houses of one room; and in all Scotland more than a million of human beings—actually above a third of the whole population—living in houses of that miserable kind. Of these, about 8,000 families, or from 30,000 to 40,000 persons, live in houses of one room without a window, lighted only by the door, or by an opening in the roof or side-wall serving both for window and chimney. Who will stand up to justify such a state of things as this? Our law of strict entail disables, our law of settlement disinclines, a great many landlords to do much for the labourer's dwelling. And the labourer's employer, the tenant farmer, his natural ally, who is most deeply interested in his well-being and well-doing, and who would gladly do something to lift him out of his degraded position, is sternly prohibited by law from improving the house accommodation of his people under the pain of having his expenditure confiscated to the landlord. If the people of Scotland were not an enduring and law-abiding people, the empire would have been ringing with the wrongs of that million of silent sufferers.

DEAD LOCK AT THE BOARD OF WORKS.

SIR,—On this, the day of the publication of your journal, the members of the Metropolitan Board of Works will meet after six weeks' vacation. Nothing very unusual in that, will be said. But what I wish to ask in a few temperate words is, why should matters in the building line—such as desired alterations and improvements,—be entirely stopped during these six weeks, to the loss of fine weather, and to the inconvenience of families returning from the country. I speak from personal experience of certain works requiring the sanction or approval of the Board, which could not be obtained until after,—and no one could say how long after,—the six weeks. I know the want of trust or jealousy vestrymen have in one another, but surely in such a constituted Board as this the members ought to have sufficient confidence in one or two who might receive full authority to act during the vacation, to sanction such matters as might be required, rather than cause delay for six weeks. If there be no such members in whom confidence can be placed, a re-constitution of the Board would seem desirable.

AN OLD BUILDER.

THE ANT NUISANCE.

SIR,—I consider that your gratuitous admission of questions of personal interest in your columns is a great public benefit; and having to thank you for such occasional favours on my own account, have much pleasure and satisfaction in replying to your correspondent "B." on this subject, if you think proper to afford my experience an insertion in your next number. Some years ago, when in business, I let a mansion of importance (which I need not particularise), belonging to a man of title, to a lady of title, whose people discovered what I had not, that the kitchen department in the basement was infested with white ants. The lady declined to occupy it, nor did the owner wish her to do so, until this evil was remedied, which I undertook to accomplish. They abounded in milliards, yet singly, appeared like grains of dust, hardly perceptible without the aid of a microscope, yet in a few minutes coated any article of food with a white appearance. We first tried baits of raw meat, which were speedily covered with them. These we rinsed off in hot water and relaid. Two men were actively employed for two days in this operation without any apparent diminution of quantity, or affording any trace of their haunts. I then had all the woodwork stripped from the walls of the kitchen, scullery, and larder, where we found abundant evidence, and immediately, not only gave the walls a good dose of fresh hot lime whiting, but also the back of the old woodwork, which was considerably decayed, before it was broken up to be burnt, and afterwards fumigated those places with sulphur for three or four days, to destroy any stragglers. We then coated the brickwork with compo instead of wood panelling, leaving no crevice in the wall or in the joints of the stone flooring, to afford a future harbour, and yet after this they seemed as abundant as ever. Being then convinced that the chimney and fireplace were the only inlets left, I had the jambs and mantel removed, where we found them in great abundance, dosed the whole even to the rubbish, with quick lime, and then restored all carefully, so as not to leave any crevices or spaces.

This was an effectual remedy, and I never heard any complaint afterwards. I have referred to the cost, which I find was 26*l.* 15*s.*,

and it was accomplished in a fortnight, to the great satisfaction of all parties.

At that time I heard of one or two houses in the same locality being similarly infested with white ants; but the owners seemed indifferent to the nuisance or thought it irremediable. These are the only instances of house-ants that I have ever met with. I believe they were generated in the decaying woodwork, and found haunts for themselves afterwards. W. B.

Kensington.

P.S.—Since writing this letter, I have been informed on good authority of some almost new London mansions being infested with ordinary black ants, which I apprehend must come from the earth. Were the case mine, I should try sulphur fumigation; then well stopping all crevices and painting: but I hope "B.'s" grievance may be white ants, and that the knowledge of my experience may be useful on the subject.

IN answer to "B.," arsenic and honey, mixed and placed here and there, prove very effective in the destruction of ants. A.

SIR,—If your correspondent "B." would persevere with *scalding water* wherever he sees the ants predominate, as the best remedy, he would eventually be free of them in his house.

A SUBSCRIBER.

THE LATE THOMAS BRASSEY, CONTRACTOR.

THE life of any man correctly sketched will be of interest to other men, and may be of use to some. Biography requires the greatest intellect and art, just as portrait-painting requires the greatest intellect and skill. Any generation which produces one first-class biographical writer, and one true portrait-painter, is endowed with enduring fame. The man to describe and the man to delineate must have that touch of nature which makes the whole world kin. Men are not made giants, either by mental or by bodily training; they are from their birth gigantic. Hercules strangled the serpent in his cradle, and in maturity performed his celebrated labours. No academy imparted to him this strength. This fact (or myth) is not remembered by those who deal in superlatives when writing of men. "Some men are born great, some achieve greatness, and some have greatness thrust upon them." Our biographical writers do their best to thrust greatness on the men whose lives they should describe truly. Sir Arthur Helps does not escape this charge in his elegant and kindly biographical notice of Thomas Brassey, late railway contractor. A life it is not. To describe a man, he must be known to his biographer, as Shakspeare knew the men he described; the entire man must be present to his mental vision. Shakspeare saw the men Hamlet, Lear, Macbeth, Othello, and Falstaff in their entirety, and measured their ambition, their passions, their virtues, and their vices, through the range of their natures: hence such accuracy in the sketches given. To describe what Shakspeare saw and did not write would require an intellect greater than Shakspeare's. When such a man lives he will, however, do his work without straining effort. God-like power will be used in god-like manner. He will see where others grope, he will walk where others stumble, he will describe where others caricature.

Thomas Brassey, railway contractor, was by nature a great and good man. He was honest: he inherited a sound mind in a sound body; the work he set himself to do was a pleasure. Prosperity did not elate—misfortune did not depress. He was hopeful, cautious, and enduring. He never broke his word. Thomas Brassey worked to make money, but he did not worship money. Business did not trouble him—did not spoil his digestion, and, consequently, did not sour his temper. He made money, and he lost it, in far greater proportions than most men. The result of his entire life's labour did not give him 5 per cent. on the contracts executed, and during his career he lived unostentatiously and moderately. He made his bankers his bookkeepers, and for the earlier years of his life was his own secretary. He could abstract himself for correspondence in the midst of company, and could explain his views and wishes tersely. Any room he occupied was, for the time, his counting-house, any table his escritoire, and his despatch-box was a large breast-coat pocket. He believed in the honesty of men, and men believed in him. He was cautious, and begot caution; he confided, and begot confidence; he trusted, and begot trust; he was truthful, and begot truth; and he was generous, and begot generosity. Men who served under him learned truthfulness and self-respect, whilst they bettered their worldly fortunes. A man cannot be praised for a sound constitution, but he may have credit for preserving it. Nature gives him a good digestion, and he does not tamper with it. He devotes his life to labour, and pursues it to the end, acquiring wealth, respect, and honour. Such was the man Thomas Brassey, late railway contractor. Long may England produce such men and such contractors!

BEDFORD.

AT St. John the Baptist's Church, the white-wash which had accumulated upon the tower of this church for centuries has been all removed, and the walls are re-pointed. The tracery of the belfry and west windows is partly new also. In the niche there has been placed a figure of the patron saint, and in a square sunk panel just underneath has been carved the Agnus Dei,—lamb and flag. The figures are by Mr. Harry Hems, of Exeter. The whole of the contract has been carried out by Mr. John Hinton, of Bedford, from the designs of Mr. Wing, of that town.

A new shop has just been erected in the High-street, from the designs of Mr. John Usher, architect. It is of Gothic character, and the whole terminates in a crocketed gable, which in itself forms a conspicuous feature in the sky-line of the main thoroughfare in which it stands. The materials used are red brick, with dressings of Hare Hill and Bath stone. The shop is supported by columns of ironwork, with foliated capitals in the same material, picked out with gold and colour. A sprinkling of carving is scattered about the front. Two dogs, carved in Portland stone, and each about 3 ft. 6 in. high, sit upon dwarf columns, one on either side of the spring of the upper gable. The whole of the works have been carried out by local tradesmen. The carving here also is by Mr. Hems.

THE BREWSTER GATES AT LINCOLN'S INN.

SIR,—In the article entitled "Improvements at Lincoln's Inn," in the *Builder* of the 21st inst., the Brewster Memorial Gates are stated to have been "designed in Belgium." This is not the case. They are an adaptation of the design of a grille, bearing date 1576, in the town-hall of Lüneburg, in Hanover, and were executed in Coventry. They were intended to be placed across the terrace-walk of the Temple Gardens (close to the Thames Embankment), and to form part of a boundary-fence between the gardens of the Inner and Middle Temple. The complete design includes the armorial bearings of those two Inns of Court, one on each of the side-gates. After the work had been executed, it was determined to throw the two gardens into one, and the memorial was thereupon erected (minus the lamb and winged horse) in its present position at Lincoln's Inn.

A BARRISTER OF LINCOLN'S INN.

THE BUILDING TRADE.

THE position of affairs at Messrs. Corbett & M'Clymont's, West Brompton, remains, we are very sorry to say, the same as it was last week. The general committee of the Central Association of Master Builders met on Thursday, to receive the report of the sub-committee appointed to draw up the rules for the permanent organisation of the society, which is intended to take up the ground occupied by the General Association of Master Builders, prematurely dissolved after the great strike in 1859. According to the prospectus, "workmen's trade-unions are so well organised and so extensive that the only possible way of meeting the various demands continually being made by the men is an extended combination of the employers of labour." It is therefore proposed that the resuscitated society shall consist of any employer connected with the building interest in England, Scotland, or Ireland, who should be approved by the committee, the subscription to be one guinea annually. The main objects to be attained will be the collection of statistics and other information useful to the trade. The association will be in communication with all the other kindred societies throughout the country, and will endeavour to secure by its organisation the prevention of unjust strikes against individuals, or oppressive demands on the part of the men.

BRISTOL.

NEW schools for the parish of St. Gabriel, Upper Easton, Bristol, were opened on Monday, under the presidency of the mayor, Mr. Proctor Baker. The schools will accommodate 550 children, and the buildings have cost 1,260*l*. Messrs. Wilkins & Son are the contractors. The sum of 90*l*. was allowed for the foundations, owing to the loose nature of the soil; but on making excavations it was found necessary to expend 350*l*. on this part of the work.

Another "British Workman Institute" was inaugurated at Bristol, on Monday evening last, under the most auspicious circumstances. The locality selected is the Broad Plain, St. Philip's, and the building is a substantially-built house that had apparently at one time been occupied by people of no mean position. On the ground-floor is the coffee and reading room, capable of seating upwards of 100 persons, and here newspapers and periodicals will be kept for the use of those frequenting the institute. On the first floor is a spacious club-room, suitably furnished, and large enough to accommodate from seventy to eighty persons. A smoking-room is on the same floor, and will contain bagatelle and chess boards, and other means of amusement, and the rooms above are set apart as bedrooms.

SANITARY CONDITION OF NEW HOUSES

SIR,—I should feel obliged if you could give me a small space in your columns to describe to your readers the sanitary condition in which many of the houses are in the north-west district of London. I shall only take one house as an illustration which equally applies to many. The one in question is of a block of good-looking houses recently erected by a once celebrated speculating builder. On entering one of the principal rooms, which is of large dimensions, lofty, with large windows, I remarked to the tenant as to a bad and unhealthy smell. The answer was, "That it proceeded from the next house; the drains were out of order." That answer not being satisfactory, I raised the window-sash, and found, not 12 in. from the window-sill, a stack-pipe, with rain-water head to receive the water from a back roof, which pipe was connected to top of lead bend from W.C., which lead bend entered into a cast-iron pipe, and discharged itself into catch-pit at bottom. Presuming that there is a trap at the junction with the main sewer, which is many feet distant, the serious and crying evil arises from the fact that none of the joints from the catch-pit upwards are cemented in any way; hence the external air gets in at these apertures, and causes a current of poisonous gases to rush upwards, and discharge themselves into our rooms and the surrounding atmosphere. Have the public authorities no power to put an end to such poisonous arrangements? A PRACTICAL MAN.

BUILDING IN BITUMEN.

SIR,—Referring to statements made with reference to Norton's Patent Bituminous Building Construction, and the formation of a "limited" company to work the same, I should wish before investing to make one or two observations and inquiries; and if you will allow me to do so through the medium of the *Builder*, the answers may interest numerous readers. I may premise that I have seen such specimens of his work as Mr. Norton had to show recently in Manchester.

First, as to its combustibility. All bitumens, wherever found, burn readily in atmospheric air. Italian bitumen is no exception. For many years past inventors have been striving to produce a non-combustible material with which to build, and they have succeeded, and houses are now built which cannot be burnt down by any fire originating inside them; but here we have a proposition by Mr. Norton, not only to use a highly combustible material as a cement, but actually to use the same material to make bricks with. Would not walls so constructed be highly inflammable?

But Mr. Norton says bitumen is a most excellent non-conductor of heat, and gives as a proof the surprising fact that a 9-in. wall having a thin partition of asphalte between the outer and inner halves, and a thin coating of plaster on the inside, resisted the action of an intense coke fire for five weeks, while the wall on the outside was "comparatively cool." How am I to reconcile this with the statement in "Muspratt's Chemistry," that Italian bitumen softens at 212° Fahr., and fuses completely at 234°? Does Mr. Norton mean to say that bitumen will not melt at a red heat? And if the bitumen melted (as it most undoubtedly did), what held his wall together? But perhaps the wall was built of firebrick, though I do not see that that would help him much. The softening of the asphalte would allow the superincumbent weight to come into play, and the wall would settle or fall. Such an event would take place by the burning of the furniture of a single room, especially if the walls were lined with wood boarding, as Mr. Norton proposes.

Coming now to the question of cost as compared with ordinary brickwork with mortar, I observe that Mr. Norton states 1,600 bricks are necessary to build 100 square feet of 14-in. work with mortar joints, whereas he makes 1,200 bricks fill the same space with asphalte. If these bricks are all of the same size, the difference in the

thickness of the joints must be equal to the contents of 400 bricks, or 28 cubic feet.

But Mr. Norton allows only 7s. 6d. for the necessary asphalte in 100 ft. of 14-in. work, which as I have shown equals the mortar plus 28 feet cube: a sum obviously insufficient.

Again, 1,200 bricks, 8½ in. by 4½ in. by 2½ in., are made with the necessary mortar just sufficient to make 100 ft. of 14-in. work. Mr. Norton says 1,600 are necessary, and calculates the cost accordingly. If these 400 bricks are deducted,—as I maintain they must be,—it will make a difference of 13s. 6d., together with their mortar and cost of laying.

Then, again, we are told that under the present system a bricklayer can lay some 700 to 800 per day only, whereas by the new method he can lay between 3,000 and 4,000 per day. The first statement is near the truth; but Mr. Norton must not expect any practical man to believe the latter. So far is it from the truth, that as face-boards have to be fixed on both sides of the work, scaffolding to be fixed, bricks to be carried up, asphalte melted, carried, and poured, and the boards removed, and wall pointed, it seems reasonable to suppose that the man will have done a good day's work if he succeeds in getting 500 bricks into position, instead of over 3,000. For the whole of these operations to 100 ft. of 14-inch work Mr. Norton allows the magnificent sum of 5s. 7d., the workman to find his own coals and tools, and all other labour and carriage of materials necessary to complete the work. I should like to ask how it is that Mr. Norton is able to secure labour at such a scandalously low figure; because if I take out a licence to build in this way, I very much doubt my ability to get it done for less than treble the money he allows for the operations.

Not only is it stated to be the intention to *license* builders to use the patent methods, but the company propose to become builders and contractors themselves, and the prospectus states that "assuming the company only to construct 40,000 rods of brickwork per annum—*an obviously trifling quantity*—it would earn a profit of 60,000*l.*" I should like to ask what data Mr. Norton has for such an assumption. Why 40,000 rods of brickwork per annum must be a very large part of all that is done, in this country at least, seeing that its value would be about a half million of pounds. What are the licensees and those who will still build with mortar and cement to do?

A BUILDER.

THE RECREATION GROUND FOR WARRINGTON.

SIR,—I was glad to read in your publication of the 14th inst., a letter signed "M.D.," upon this subject, showing the undesirability of the proposed purchase, both as regards price and locality.

I can fully endorse every word of "M.D.'s" objections, for since the appearance of his letter, I have seen what is to be seen almost every day—viz., the proposed recreation ground almost enveloped with smoke and muriatic emanations from the various works contiguous to it, fully bearing out what the present owner, the Right Hon. John Wilson Patten himself said of it, more than two years ago—viz., "that it was no longer a place fit to reside on," and yet with an unaccountable perversity, the corporation of Warrington deem it a suitable site for a recreation-ground for the people.

I am in hopes that the attention of the local Government Board may be drawn to "M.D.'s" letter, before referred to, in your valuable publication, and institute an impartial inquiry into the whole subject. It is worth while here to remark, that while Leeds has just purchased a "park" or "recreation-ground" for 170*l.* per acre in an eligible situation, the extravagant corporation of this town have actually agreed to give (subject to the approval of the local Government Board, of course) 1,000*l.* per acre.

SENEX.

PREMIUMS AWARDED BY INSTITUTION OF CIVIL ENGINEERS.

THE Council of the Institution of Civil Engineers have awarded the following premiums:—

1. A Telford Medal, and a Telford Premium, in Books, to Bradford Leslie, for his "Account of the Bridge over the Gorai River, on the Goalundo Extension of the Eastern Bengal Railway."
2. A Telford Medal, and a Telford Premium, in Books, to Carl Siemens, for his paper on "Pneumatic Despatch Tubes."
3. A Telford Medal, and a Telford Premium, in Books, to William Bell, for his paper "On the Stresses of Rigid Arches, Continuous Beams, &c."
4. A Telford Medal, and a Telford Premium, in Books, to John Herbert Latham, for his description of "The Soonkésala Canal of the Madras Irrigation and Canal Company."
5. A Telford Medal, and a Telford Premium, in Books, to George Gordon, for his Paper on "The Value of Water, and its Storage and Distribution in Southern India."
6. A Telford Premium, in Books, to Frederick Augustus Abel, F.R.S., for his Paper on "Explosive Agents applied to Industrial Purposes."
7. A Telford Premium, in Books, to Bashley Britten, for his Paper on "The Construction of Heavy Artillery."
8. The Manby Premium, in Books, to Charles Andrews, for his Paper on "The Somerset Dock at Malta."

THE FALL OF A GRAND STAND AT OUTLANE, NEAR HUDDERSFIELD.

OUR readers will remember the fall of a grand stand at certain athletic sports and races near Huddersfield last month, and the injury of between sixty and seventy persons. An inquest on the death resulting in one case has been held, and the verdict is as under:—"We, the jurors, unanimously find that Harriet Widdop came to her death on the 15th of September, from injuries received by her by reason and in consequence of the fall, on the 25th day of August last, of the grand stand at the steeplechase and athletic sports at Outlane, in the township of Longwood. We also unanimously find that the said grand stand fell in consequence of defective construction, but that such defective construction does not amount to criminal negligence on the part of any person or persons. And we are unanimously of opinion, and strongly recommend, that grand stands and platforms at all public entertainments should in all cases, before being used, be carefully examined, and certified as properly and suitably constructed, by a competent architect or surveyor.

CHURCH-BUILDING NEWS.

St. Michael, Eaton Hastings (*Berks*).—This interesting little church, containing, specimens of Early English work, and a fourteenth-century roof intact, is undergoing restoration of the nave (the chancel having been previously restored, at the expense of the rector), under the superintendence of Mr. W. Scott Champion, architect.

Margate.—St. Paul's Church, with parsonage, has been commenced, under the direction of Mr. R. H. Blessley, architect, Eastbourne, the site being on the Cliftonville Estate, given for that purpose by Mr. T. D. Reeve and Mr. J. Andrews. The contract has been taken by Messrs. Cook & Green, of London, for the sum of 8,500*l.*, inclusive of boundary-walls. The church will be spacious and lofty, measuring internally 89 ft. long and 56 ft. wide, and the roof is to be carried through a uniform height of 51 ft. The chancel measures 22 ft. by 31 ft. The nave is to be of six bays, with arcade arches springing from circular columns, with clearstory windows over. Arches divide the north and south chapels from the chancel, designed for vestry and organ-chamber. The church is to be built of brick, faced with random-coursed Kentish rag stone. The dressings to the doors and windows will be of Box-ground Bath stone. The aisles will be paved with encaustic tiles, as well as the chancel. The reredos, pulpit, and font are to be of Bath stone. The tower will be 80 ft. high, and will contain a peal of bells. The style adopted by the architect is Early Decorated; and there will be accommodation provided for 800 people. The roofs are to be open-framed, and stained, as well as the seats, and the whole building is to be heated with hot-water pipes. The clerk of works is Mr. Mark Davison. The foundation-stone was laid on the 14th inst. by the bishop suffragan of Dover, and it is expected the church will be completed by the middle of September, 1873.

Maidstone.—The works connected with the new church of St. Faith are being rapidly completed, and the church will be consecrated on the 20th inst., by the Archbishop of the diocese. The building is of Gothic construction, and the details are wrought out under the Early English Decorated style. The internal arrangements comprise a nave 68 ft. 3 in. long, and 30 ft. wide; aisles 13 ft. 4 in. wide, and chancel about 30 ft. each way. The pillars at the sides of the nave have a basement of Bath stone, the rest of the work being done in red Mansfield stone, surmounted by carved designs, exhibiting natural foliage conventionally treated. The representations include oak-leaves, ivy, lilies, columbines, strawberry-leaves, roses, and ferns. The pulpit, which is placed at the left-hand side of the nave, is supported by Peterhead granite pillars, and is principally formed of white Caen stone, carved and inlaid with red and green marble. It is reached by four steps leading from the chancel, which is slightly elevated from the body of the church. From the sides of the chancel, figures representing Praise and Adoration are extended, and others bend over the communion, holding the emblems of the Sacrament in their hands. The whole of the carving has been performed under the personal direction of Mr. E. Whitehead, sculptor, London. There are seven windows at the east end of the building, ten at the north and south sides, and two large ones, of the lancet shape, at the west end, which are surmounted by a rose-window, and a smaller circular one. There are besides several lights in the upper portion of the church, and these, in common with the rest, contain cathedral glass. The building will be capable of seating 600 persons. The oak polished seats are open at the ends. The flooring of the nave aisles, and east end, is tesselated with Staffordshire tiles. In the outer western wall a niche is cut for the reception of a figure of the patron saint, St. Faith, but means are wanted in order that the statuary may be procured; a similar need prevents the erection of the contemplated steeple. The architect of the building is Mr. E. W. Stephens, and his designs have been carried out by Messrs. Clements & Wallis, contractors. It is proposed to enclose the church within iron railings, and to convert the "green" into a spot more worthy of its name. When this is done, the neighbourhood of St. Faith, including the Brenchley gardens, will form one of the most pleasing features in the town of Maidstone.

Lincoln.—The font has been placed at the west end of the interior of the new church of St. Martin. It is a carved octagonal stone font, standing on a shaft of red Marfeldt columns. The givers were Messrs. Huddleston & Son. The seven apse windows have also been put in. The centre one represents Our Lord as the Good Shepherd holding a lamb in his arms. This is the gift of Mr. Robert Dawber, jun. On the right hand is Our Lord blessing little children—the gift of Mr. Charles Allison. On the left Our Lord as the guardian of children—the gift of Mrs. Johnson, Newland. Next, Christ walking on the water—the gift of the late dean. Opposite to it is Christ knocking at the door—the gift of the young ladies of Mrs. Roome's school. Then two decorated windows—the gift of a friend of the vicar. There are yet the larger west window, and nine aisle windows to be put in shortly. The whole of the glass is furnished by Messrs. Hughes & Ward, of London, and will cost about 600*l.*

Tattingstone.—The church here has been reopened. The funds at the disposal of the committee were limited, and compelled them to confine their attention to the repairs which were absolutely necessary, and to the reseating of the church. The advice of Mr. Henry Hall, architect, London, was sought, and upon the report and designs, and under the supervision of that gentleman, the restoration has proceeded. Upon examining the plaster ceiling the architect found that it covered an open-timbered roof, and this has been restored so far as the funds allowed, but the panelling has only been completed in the easternmost bay. The roof, which is a double hammer-beam roof, is divided into five bays by oak trusses, with moulded and curved ribs springing from carved corbels, and having angels carved at the ends of the hammer-beams. The figures had been a good deal mutilated, but what remained was enough to serve as a guide for the restoration of the remainder. There is no chancel arch; a truss is placed at the junction of the nave and chancel, with crowned heads at the ends of the hammer-beams, and in olden times there was a rood-screen. The completed bay is panelled, the panels being divided by moulded oak ribs, with bosses at the intersections. The whole roof is boarded with pitch pine. Vertical pieces, with tracery between, are placed above the wall-plate. The roof of the chancel is wagon-headed, and, the plaster having been removed, it has been boarded in a similar manner to the nave roof, with moulded ribs having carved bosses at the intersections. The floors of the nave and chancel are on the same level, and are now covered with light open benches, in place of the old pews. The seats have a slight incline towards the sloping backs. In removing the old pews some of the original bench-ends were discovered, and these have served as patterns for the new ones, some of which are of a conventional type, whilst the others have been carved with fruit, flowers, corn, leaves, &c. The backs of the benches are panelled. The pulpit stands at the north-east corner of the nave, and is placed upon a stone base. It forms four sides of an octagon; is made, like the benches and roof, of pitch pine; and has open tracery, with spandrels and patera in the cornice, carved. The benching of the chancel is similar in character to that of the nave, and on the north side the old organ, which has been repaired, and fitted with a pine case and gilt front, by Mr. Green, of Ipswich, has been placed, the heavy gallery at the west end in which it formerly stood having been removed, and thus opened out the west window. The space within the communion-rails has been laid with Minton's encaustic tiles, supplied by Messrs. Simpson & Son, of London. The stone reredos is divided into panels. The ground space of the tower, which was not formerly utilised, has been shut off from the nave by a screen of pitch pine, so as to form a vestry. The north porch, which is that chiefly used, has been repaired and restored by the present incumbent, and a new two-light Decorated window has been inserted in the north wall of the nave, on the

west side of the porch, the corresponding window on the east side having been lengthened. The roof has been re-tiled throughout. The whole works, the cost of which is about 700*l.* or 800*l.*, have been carried out by Mr. H. B. Smith, of Ipswich. The peal of five bells has been re-hung by Mr. Naunton, Ipswich. At the re-opening services, these bells were rung by the company of ringers of St. Mary Tower, Ipswich.

Hastings and St. Leonards.—Alterations are going on at St. Mary Magdalen Church. The most noticeable portion of the improvements are the enlargement of the chancel, and the erection of an organ-chamber on the north-east side. A new and larger window of stained glass, representing the Life of Christ, has been placed over the communion, by Messrs. Clayton & Bell. All the details of the alteration are not yet completed. A reredos is still in course of preparation. There are other minor improvements, which have been carried out by Messrs. Hughes, by whose firm the church was originally built. A special re-opening service has taken place.

Keyworth.—The parish church has been reopened. The improvements that have been effected may be briefly summarised. The loft has been removed, the pews replaced by chairs, a new roof has been erected, new windows put in, and accommodation provided for about 270 persons. The work has been done by the day and not by contract, Messrs. Bodley & Garner, of London, being the architects. The east window is by Messrs. Burlisson & Grylls, of London, and the other windows were supplied by Mr. Sollory, of Nottingham. A number of ladies formed themselves into a committee, and to their efforts the insertion of an east stained window is due. A sum of 80*l.* was collected, and with this money the window has been purchased. The subject is the "Crucifixion." The interior of the chancel is in need of further fittings, and there is a deficiency in the building fund that will have to be met.

Heene.—The foundation-stone of a new church has been laid. It is to be built on the site of the old one. Messrs. E. Nash & Co., of Brighton, have undertaken the contract, at about 2,000*l.* The style is Gothic, and the edifice will be faced with flint on the outside, and cased with brick on the inside. The west wall is so built that it can be taken down at any time to enlarge the church. The seating accommodation is for 350 people. The size of the nave is 49 ft. in the clear—the chancel will be about 32 ft. The chancel arch will be red moulded brick, and all the arches will be of the same material, moulded by special design. The inner moulding will be in chalk. The pews will be stained and polished, with sloping backs. The windows, with dressings, and the columns, will be in Bath stone. The chancel will have a fancy cresting, with slate roof, the timber being stained and varnished. The architect is Mr. E. E. Scott, of Brighton.

Darlington.—The Church of St. Paul, North-road, Darlington, opened a short time ago by special licence, has been consecrated by the Bishop of Durham. The edifice stands on a prominent site, and is the only architectural ornament of which that portion of the town can boast. Its style is Early Decorated. It has a nave, 75 ft. by 26 ft.; chancel, 28 ft. by 22 ft.; aisles, each 74 ft. by 14 ft.; vestry, organ-chamber, and a tower and spire at the south-west angle of the nave, 130 ft. high. The west end, which faces Durham-road, has a spacious doorway in the centre, with a large three-light window over it, the end of the north aisle being relieved by a two-light window, and the end of the south aisle being finished by the tower. The sides of the aisles are pierced by two-light windows, separated by buttresses, and a lofty clearstory is similiarly arranged. The east end is filled by a large four-light window, and the sides of the chancel by long two-light windows, and each gable is surmounted by an ornamental cross. The tower is divided into four stages, the first being a porch; the second, the ringing-chamber; the third, the clock-chamber; the fourth, the belfry, and a lofty spire surmounting the whole. Internally the nave is separated from the aisles by five arches on each side, springing from pillars of red stone, with moulded bases, and caps of white stone, which is relieved by a little carving. The roof of the nave is open to the ridge, that of the chancel wagon-headed or arched. The seats are all of pitch-pine, open, with low slanting backs, and moulded ends, accommodation being provided for 600 adults. The floors of the chancel and passages are all paved with mosaic tiles. The pulpit and font are of Caen stone; the reading-desk, of oak; the communion-rails, of iron and brass. The windows are all filled with cathedral-tinted glass, having coloured borders. The woodwork is stained and varnished. The church is warmed by Lewis's patent warm-air apparatus, and lighted by gas-standards. The whole of the works were carried out from the designs and under the superintendence of Mr. Pritchett, of this town; and the total cost, including iron railing, lighting, warming, and professional charges, is about 4,000*l.*, exclusive of site.

DISSENTING CHURCH-BUILDING NEWS.

Hebden Bridge.—A new Wesleyan chapel has been opened here for divine service. The edifice is in the Gothic style, from plans by Messrs. Whitaker & Russell, of Rochdale. The woodwork is of pitch-pine. The following are the contractors for the several sections of work:—Jonas Kershaw, mason's work; Kershaw Smith, Mytholmroyd, joiner's work; plastering, Messrs. Sugar & Son, Heptonstall; plumbing, gasfitting, warming apparatus, Walsh, Halifax. The chapel will provide accommodation for 300 persons, and has cost 2,000*l.* It is 55 ft. long and 35 ft. 9 in. wide, with schoolroom the same size underneath. The chapel-floor is reached by a flight of stone steps, terminating at an entrance-porch. The whole of the chapel is fitted with pews, affording accommodation to 300 persons. The schoolroom under the chapel is well lighted and ventilated, and will accommodate about 200 children. There are four class-rooms, formed by partitioning off one end of the schoolroom, and every convenience for holding meetings has been provided. The stone used in the building is all from local quarries, and the exterior is faced with pitch-faced parpoints in regular courses, the ashlar dressings of the windows and doors being of a somewhat lighter colour. The gables are finished with plain coping, with moulded apex stones at the top. The roofs are covered with Welsh slates and red Broseley ridge cresting. The roof is ceiled half-way up the gable, the principal timbers are exposed, and on each side there are curved braces resting on moulded corbels. The whole of the timber exposed to view, and the pews, and other inside woodwork, are in pitch pine, varnished. The windows are glazed with glass of a simple pattern and tint. The chapel and school are warmed by hot-water pipes.

Pendleton.—The new United Presbyterian church at the junction of West High-street and Seedley-grove, Pendleton, has been opened. The new edifice, which is after the Gothic of the thirteenth century, has been built by Mr. E. Johnson, of Manchester, from designs made by Mr. W. H. Ward, Birmingham. Sitting accommodation has been provided for 500 or 600, and schools attached to the church will hold 300 children. The cost of the building has been about 3,000*l.*

Clavering (*Essex*).—The chapel which was opened last week for the Congregationalists consists of the chapel proper, fronting the high road, and several rooms behind, required for week-day services, classes, public meetings, and the Sunday school. Facing one on entering, at the farther end of the chapel, is the preaching platform,—the lower stage for the communion-table and the upper for the minister. It is formed of turned and pierced woodwork, stained and varnished, as is also the whole of the woodwork of the chapel. The galleries surround three sides of the chapel, and are supported on iron columns, coloured and gilt, and the front is framed of wood, fitted in with ornamental iron panels decorated in colour. Sitting accommodation is thus provided for over 370 people. The principals of the roof are exposed to view, but the common rafters are plastered. During cold weather the building will be warmed with a Gurney's stove, sunk under the floor. On each side of the platform is a pointed arch door, that on the right leading to a minister's vestry, and on the left to a large class-room. In the rear of the vestry is a scullery, &c., for use at tea-meetings, and a separate entrance. Above these rooms is a large room, with open-timbered roof, for the use of the Sunday scholars, and for public meetings. It is approached by a separate stone staircase from the exterior, and has doors leading into each gallery to enable the children to enter the chapel without going outside the building. The walls of this room are left without any plaster, and have bands of coloured brick worked in as ornament. The chapel itself is plastered, and it is intended in the course of next spring to decorate the walls and roof with painting and stencilled ornament in distemper colour. The building is of Early French character, simply treated. The walls generally are of white Cambridge bricks, relieved by red and black in bands, arches, &c., and by Bath stone and red Mansfield in the tracery of the windows, shafts, bases, &c. The entire cost will be about 1,300*l.* The works have been carried out by Mr. Cornwell, of Bishop's Stortford, builder, from the designs of the architects, Messrs. Sulman & Rhodes, of London.

Walker (*Newcastle*).—The new Wesleyan chapel is completed and opened. It closely adjoins the old building in which for many years the Wesleyan Methodists have performed service. The chapel consists of a central nave, 72 ft. in length, with two side aisles, 50 ft. long, with entrance porches at the west end of the latter. At the east end of the building is a minister's vestry, with the singers' gallery over it, and when funds will permit it is intended to add a large vestry, with rooms over for the residence of a chapel-keeper. Accommodation is provided for about 400 persons, and in the gallery for nearly 50 more. The pulpit platform, surrounded by the communion space, is placed against the east wall separating the minister's vestry from the body of the chapel. The contracts for the building were taken by Mr. Stewart, of Walker, for masons' and bricklayers' work; Mr. Aiston, of North Shields, for carpenter and joiner work; Messrs. M. Robson & Sons, plasterers; Mr. G. Patton, plumber; Messrs. Danber, slater; Mr. Frazier, painter and glazier; and Mr. Somerset for iron-founders' work. The whole of the works have been carried out under the superintendence and direction of the architect, Mr. F. R. N. Haswell, of North Shields. The ground on which the building is erected was presented by the late Mr. Cuthbert Hunter.

Leicester.—The memorial-stone of a new Particular Baptist chapel has been laid in Erskine-street. The building will be in the Italian style of architecture, of brick, with stone dressings. The size of the chapel will be 61 ft. by 44 ft. It will be galleried all round, and will accommodate 650 people, exclusive of children. There will be a schoolroom below, the same size as the chapel, and 12 ft. high, 5 ft. of which are below the ground line. The total cost is estimated at about 4,500*l.* Mr. R. J. Goodacre is the architect, and Messrs. Hewitt & Sons are the contractors.

Reading.—The Wesleyans have found their chapel in Church-street inadequate to accommodate their congregation, and have determined to erect a more commodious building in the Queen's-road. The site selected is at the corner of Watlington-street, and has the advantage of three frontages,—to Queen's-road, Watlington-street, and South-street respectively. The design is Early Gothic, and the chapel will be constructed of red bricks, with white stone dressings. It will furnish 900 sittings, and a schoolroom, 60 ft. by 31 ft., will be built on the South-street side. The cost, including site, will be over 7,000*l.* The work will be executed by Mr. Woodroffe, under the supervision of Mr. J. Morris, architect, and will be at once commenced. Nearly 3,000*l.* have been already promised.

SCHOOL-BUILDING NEWS.

Brentwood.—During the past twelve months a building has been gradually approaching completion in Rose Valley. It has been opened as a middle-class commercial school. The schoolhouse itself is a large and commodious structure, capable of accommodating 120 boys. The front to the road is of stocks, with bands and dressings of coloured brick and Portland. Projecting wings on either side of the main front and a bell-turret and flagstaff break the outline. The ironwork on the bell-cote is more than 70 ft. above the ground. The schoolroom is a lofty building, measuring about 50 ft. by 20 ft., having a high pitched roof, while abundance of light and ventilation are provided. Beneath is an asphalted playground, for use in wet weather. A plot of land opposite the school premises has been secured as a playground. The dining-hall is 11 ft. in height, and nearly in the centre of the building on the ground-floor. The principal dormitories are about 50 ft. in length by 10 ft. in height, and are fitted with a separate spring bedstead for each scholar. The lavatories are supplied with water upon a recent patent, preventing waste or overflowing. A bath-room, in

which hot and cold water is always at hand, is also provided. Gas is laid on to every room in the house. The school is within two minutes' walk of the railway station.

Templecombe. — New church schools have been opened at Henstridge, near Templecombe, Somerset, by the Bishop of Bath and Wells. The new school stands in a picturesque and central situation, within a short distance of the celebrated Henstridge Ash, the tree beneath which, according to local tradition, Sir Walter Raleigh first smoked tobacco. The buildings consist of two schoolrooms and a teachers' residence, attached to which are boys' and girls' playgrounds, and a garden for the master. The material is forest marble, rock-faced, with Doulting stone dressing. The total cost is about 1,300*l.*, including site, &c. The schools are calculated to accommodate 136 in the large room, and 80 in the infant room, being the full number for which accommodation is required by the Education Department.

PROVINCIAL.

Wavertree.—The foundation-stone of a town-hall for the ancient village of Wavertree, near Liverpool, has been laid by Mr. J. A. Picton, chairman of the local board of the district. The site of the hall is in high-street, in close proximity to the existing public offices, which have recently been sold to the Roman Catholic community for the purposes of a church and schools. The general character of the front elevation of the building is to be Italian, and it will be built with stone from the Cefn Quarries, the lower plinths being Runcorn redstone. The entrance-porch will be carried up the two stories, and finished with a pediment, the cornice being carried across the front and surmounted by a balustrade. The lower part of the porch will be supported on columns having caps of an Ionic character, the upper part being somewhat of the Corinthian type. The window in front will have moulded architraves, the lower ones having foliaged keystones, the upper ones carved guilloche ornaments, and supported on trusses. Between the windows engaged pilasters, corresponding with the columns, will be placed with suitable caps. The whole of the ground-floor will be formed of rusticated ashlar, the upper portion being plain polished work. On the ground-floor are situated the offices of the board, the board-room, strong room, &c. The public hall will be placed in the rear, having lavatories, and large retiring-room attached thereto, access being gained to the back of the hall and retiring-room through a private corridor for the use of "professionals." This hall will be 60 ft. long, 34 ft. wide, having an ornamented and enriched ceiling of an elliptical form carried by an ornamental cornice, supported by pilasters having ornamental caps. The heating of this room will be by hot-water pipes carried above the floor behind the skirting. The lighting of the room by day will be by means of large windows on one side, and at night by tripod lights placed all round the room on the top of the cornice. Attention has been paid to the ventilation of this room. On the first floor are placed officers' residences and a secondary board-room, also additional retiring-rooms for the use of the large hall. At the rear is placed the township yard, having a separate entrance from Chesnut-grove, for storeage of stones and carts. Messrs. Okills & Morrison, of Wavertree, are the sole contractors. Mr. Reeve, of Liverpool, is the architect.

FROM AUSTRALIA.

VICTORIA.

Melbourne.—The new Temperance-hall, erected by the Melbourne Total Abstinence Society, has been opened. The front of the building is to Russell-street, and is in the Italian style of architecture, with the entrance in the centre, between two shops: it is 9 ft. wide, laid with marble tiles, and has pilasters on each side with festooned trusses. At the end of this corridor are polished cedar pedimented doors leading into the lesser hall, 41 ft. by 33 ft., which will accommodate 250 persons, and will be used for ordinary meetings or smaller assemblies, whilst right and left are the main staircases leading to the large hall, which is 76 ft. long, 46 ft. wide, and 33 ft. in height. It is finished by Corinthian pilasters, with enriched moulded architraves, frieze, and cornice; a gallery runs round three sides, with a light ornamental iron railing. The hall, with its gallery, accommodates 1,000 persons. The building is of brick, and the front is stuccoed. There are three rows of windows, although there are only two floors. The two uppermost rows light the great hall upstairs. The foundation-stone of the hall was laid by Mr. M'Pherson, as Mayor of Melbourne, on the 30th September last. Mr. Ellerker was the architect, and Mr. Lockington the builder. The hall, with its fittings, will cost about 6,500*l.* Towards this 5,000*l.* have been raised on mortgage at 6 per cent. Melbourne will soon be well provided with public halls sufficient for its demands. In a few months' time the Mechanics' Institute will have its alterations completed and the new hall built. A sum of 6,200*l.* is to be expended in transforming the institute into an improved building.——The foundation stone of the new hall in connexion with the Melbourne Mechanics' Institute has been laid. The building, which will cost about 6,000*l.*, is being rapidly proceeded with.——The erection of a new synagogue for the St. Kilda Hebrew congregation, at Charnwood-grove, St. Kilda, has also been commenced.

Kew.—A Jesuit college is about to be erected here on an elevation whence the entire of Melbourne and suburbs will show as a panorama. The architect is Mr. T. A. Kelly, of Elizabeth-street. The style selected is Classic, such as that of Southern Italy. The main block consists of a parallelogram, with projecting central and side blocks crowned by dentilled and moulded pediments, and connected by overhanging eaves of a similar character. The wings are connected on the different floors with the central portion by broad verandahs to each floor. The hall runs transversely, and is 12 ft. wide, and opening off it are broad corridors running the entire length of the building. At the termination of these corridors the main staircases will be met; these are carried up in towers which rise to a total height of 100 ft., and terminate in a low flat pointed roof. To the right, on the ground-floor, are the play-rooms, class-rooms, and study; while on the left will be found the parlour, private rooms, and refectory, this last 42 ft. by 24 ft. This floor is 17 ft. high. On the upper floor are the dormitories, infirmaries, lavatories, bath-rooms, and chapel; the larger dormitory is over 60 ft. square. To the north will stand in a detached block the kitchen buildings, their usual adjuncts, and the offices for the service of the college. The projecting wings are pedimented, and enriched by moulded freestone quoins springing from a moulded blue-stone base, and are pierced with windows having the usual freestone dressings. The general character of the building is similar, the principal entrance consisting of projecting and recessed circular-headed doorways, flanked by small similar windows. The towers are pierced by windows similar in character, and divided at the different stages by projecting cornices. The roof springs from the eaves, and, sloping back all round, forms a large lead flat, centrally protected all round by a wrought-iron balustrade. The verandah all round is supported by coupled iron columns resting on bluestone bases, and enriched with fancy ironwork of classic design. The contemplated expenditure will be about 16,000*l.*

Wages at Melbourne.—The following wages for skilled labourers and other tradesmen are without rations, unless where specially mentioned:—Stonemasons and plasterers receive 10s. per day; carpenters, from 8s. to 9s. per day; slaters, 10s. to 11s. per day; bricklayers, 10s. per day; labourers, from 6s. to 7s. per day; pick-and-shovel men, 6s. per day: the day's work is eight hours. The average earnings of cabinet-makers, for good workmen, are 2*l.* 15s. per week; and for second-class workmen, from 40s. to 45s. per week.

Miscellanea

St. James's Park.—The Westminster District Board of Works have just carried out at their own expense, aided by a contribution of 150*l.* from the residents in the neighbourhood, an excellent local improvement in the construction of a carriage-way from the Birdcage-walk, in St. James's Park, to Queen-square, and the demolition of unsightly railings which have for many years separated Park-street from Queen-square. This will enable the Metropolitan Board of Works to get rid of one of the "Park-streets" of the metropolis.

The Choir-Screen, Exeter Cathedral.—Our readers will remember a sharp discussion that occurred as to the retention or otherwise of the choir-screen in Exeter Cathedral, at the time the restorations here commenced. One party advocated its removal, and the other insisted upon its retention. The dean and chapter were averse from the removal, and Sir Gilbert Scott strongly opposed it, intimating that if it was intended to pull down such an interesting relic of antiquity, another architect must be employed in his stead. Both with the chapter and the architect the propriety of piercing the screen was allowed to remain an open question, but at last the matter has been settled. While adhering to their determination to retain the screen proper, and to the belief that the organ cannot be placed in a better position than where it is, at the top of it, they are agreed that the general appearance of the building will be improved, and the convenience of the worshippers be increased, by the perforation of the unsightly stone and rubble wall of separation against which the return-stalls of the choir rested. The inner arches, now filled up by rough masonry, will, in fact, be cleared out, and the open stonework, similar to that which runs down the north and south aisles, from the reredos to the screen, will be extended across the back of the screen, and against it the western walls will stand. This piercing of the screen will afford a partial view into the choir from the nave, and will enable people in the nave to hear the service, and probably the preacher in the choir. Sir Gilbert Scott approves this plan of dealing with the screen, because the principle of preserving what is worthy of preservation is adhered to, and the objection to the complete cutting off of one part of the building from the other by a thick wall is surmounted.

Institution for the Blind, and the Deaf and Dumb, at Stockport.—The foundation-stone of a new institution for the blind, the deaf, and the dumb, at Stockport, has been laid by Miss Louisa Walthew, the eldest daughter of the mayor of that borough. The new building will occupy a central position in the town, in St. Peter's Gate. It is estimated that it will cost over 3,000*l.* It will be built in the Italian style of architecture, will consist of three floors, and will have a stone frontage. On the first floor will be the committee-room and a work-room; and on the two top floors will be other store and work rooms. Accommodation will be provided in the whole of the building for from 60 to 100 patients, but none of these will reside in the institution. They will go day by day, and work at several light trades, for which they will receive remuneration in accordance with the trade tariff. A library and reading-room will be established. The building is being erected by public subscription, and about two-thirds of the amount required for its completion have already been obtained. The architect is Mr. T. H. Allen, of Stockport; the contractor, Mr. Adam Goddard, builder, Stockport; sub-contractors,—for the stonework are Messrs. Hulme, Brothers, Stockport; and for the brickwork, Mr. H. Barlow, Stockport.

Optical Errors in Painting.—The *Revue Scientifique* contains a paper on this subject by Professor R. Liebreich, ophthalmologist, who went to visit the National Gallery on purpose to study the Turner collection, and, after viewing the first works of that artist, was surprised to find in his later works, posterior to 1830, quite a different, nay, a morbid manner of treating his subjects. While in his earlier productions the solar disc is clearly defined, and the rays proceeding from it are equally diffused all round, in his later paintings every luminous point is transformed into a vertical line, the length of which is proportional to the intensity of the light. Thus, for instance, houses situated on the brink of a lake, or people in a boat, are so completely mixed up with their reflection in the water that the horizontal line of demarcation between the two elements is completely obliterated, and all becomes an agglomeration of vertical lines. All that is abnormal in the shape of the objects, in the design, and even in the colour of the pictures of this period, may be explained by this vertical diffusion of light.

Ephesus in Bloomsbury.—Since the publication of our notice and illustration of the sculptured column from the Ephesian Temple of Diana, Messrs. Mansell & Co. have issued photographs of other deeply-interesting relics from the same site referred to in our article.

Gas on Board Ship.—The problem of the manufacture of gas on board sea-going ships has, it is said, been solved by Messrs. J. T. B. Porter & Co., of London and Lincoln. The gas will be manufactured from oil. The apparatus consists of three sections, viz., retort-stack, washers, condensers and scrubber, and gas-holder: the whole being contained in a space of 1,600 cubic feet, or 22 tons measurement space. The washers, &c., for the purification of the gas after it leaves the retorts, are provided with overflow pipes, so arranged that, however heavily the ship may roll, the water will be maintained at a uniform level. The holder is a combination of tank and holder. The holder is so guided in ascent and descent as not to be affected by the motion of the ship. The regulator or governor, like the holder, is also unaffected by it. Every precaution is taken against the possibility of danger from explosion: each section is separated from the others by iron bulk-heads, and every portion of each section is isolated by shut-off and bye-pass valves, so that any one or more of them may be thrown out of use, for inspection or cleansing. The gas produced is pure and bright, a jet burning 1½ to 2 cubic feet per hour being equal to eleven or twelve wax candles. The large saloon of a steamer, when lighted with thirty or forty of these jets, presented a brilliant appearance.

Drawing.—We learn from the *School Board Chronicle* that the Legislature of Massachusetts, in order to facilitate the further culture of its artizans, has issued a law by which the State is authorised to establish schools of design in every village, and compelled to maintain at least one of such schools in every town of 10,000 inhabitants. —— The committee of the Berlin Women's Association for the Encouragement of Kindergärten, &c., invites essays on the following subject:—Demonstrate the necessity of instruction in drawing for all grades of the national elementary school, and indicate a method of teaching drawing such as is applicable to the national school, and based on the writings of Fröbel and his followers, as likewise on experience gathered in the Kindergärten. The essay pronounced to be the best is to receive a reward of six friedrichs d'or (over 5*l.*), and the second best an honourable mention. Every essay must be signed with a motto of some kind, and the same motto, with the name and address of the author in a sealed envelope, is to be addressed to Herr M. C. Luther, Melchiorstrasse, 10, Berlin, on or before December 31, 1872.

A New Ventilator for Railway Carriages.—The Queen's saloon carriage on the London and North-Western Railway has had affixed to it a new description of ventilator. Outside the carriage are three little projections on the roof right over where the lamps are generally let in. These protuberances are what are called the caps of the ventilator. The movement of the train causes them to work and keep up a thorough ventilation inside each carriage to which it is affixed. The arrangement in the interior of the roof of the carriage is nothing more than an ornamental grating. Between the grating and the cap outside there is a cavity for the lamp. The cap is so constructed that ingress to wind and rain is wholly prevented. The cap rotates without noise, and by a mechanical arrangement creates an upward current which carries away all impure gases that may be generated. This little appliance can be fixed upon any railway carriage without disturbing present arrangements. It can be fitted into omnibuses, holds of vessels, as well as railway carriages.

A Mechanics' Institute for Carlton.—The foundation-stone of a mechanics' institute and workmen's club has been laid, by the Earl of Carnarvon, at Carlton, near Nottingham. The village of Carlton forms a portion of the estates which belonged to the Chesterfield family. The institution is intended as a memorial of the late Lord Chesterfield and the Hon. Sophia E. Forester, and is to be erected at the sole cost of the rector of Carlton, Gedling, and Stoke, the Hon. and Rev. Orlando Forester, who built new schools and renovated the parish church. The institute, or club-hall, will be erected near the church schools, and the architects (Messrs. Goddard & Son, of Lincoln) have prepared the plans in accordance with the general style of the schools. The building will have a frontage to the main road, and will include a newsroom, 22 ft. by 20 ft.; a lecture-room, 32 ft. by 22 ft.; together with the other rooms necessary for such an institution. The site has been given by Lord Carnarvon.

An Aquarium for Great Yarmouth.—Under the name of "The Great Eastern Aquarium Company," a scheme has been started, having for its object the establishment of an aquarium at Yarmouth, similar, in some respects, to those at Brighton and the Crystal Palace. The capital of the company is 40,000*l.*, in 20,000 shares of 2*l.* each. The plans and elevations of the proposed building have been prepared by Mr. E. Welby Pugin, who is the architect to the company, and amongst other things a central hall is talked of, capable of containing 2,000 people, and restaurants for providing refreshments for visitors. The site selected is on the north side of the Britannia Pier, commencing in a line with the north side of Prince's-street, and extends northwards 800 ft., and is 350 ft. wide. The western boundary will be in a line with the original Marine Parade, and the eastern boundary will be about 130 ft. eastward of the present Drive, and opposite Norfolk-square.

Restoration of St. David's Cathedral.—The Building Committee met at St. David's on the 13th instant, the Dean in the chair. The financial statement showed that the total receipts amounted to 21,487*l.*, and the total expenditure to 21,460*l.* A letter from Mr. King (Sir Gilbert Scott's assistant) was read, which certified that all the works connected with the first contract had been completed at a cost of 17,263*l.* 14s. 4d. The repair of the roof of the nave, with its beautiful carved ceiling, and of the south side of the nave, has been very nearly completed, but at a greater cost than Sir Gilbert Scott anticipated. The Committee resolved to repair and make perfectly water-tight the roof of the north aisle of the nave, leaving alone for the present the restoration of the parapet. They also resolved to floor the whole of the nave with concrete. The amount required for the completion of these works is 3,400*l.*

Sheffield Architectural and Archæological Society.—The last excursion for this summer of the members of this society took place on Thursday before last, when a large party started by train to Worksop, where carriages awaited them. They immediately drove off to Clumber, accompanied by Mr. White, of Worksop, and were kindly permitted to go over the house, gardens, and pleasure-grounds, after which they proceeded to Thoresby. Here, also, by the kindness of Earl Manvers, they were permitted to examine the new house and garden, accompanied by Mr. Horncastle, the Earl's agent. They then proceeded to Edwinstowe, where, after visiting the church, the president (Rev. J. Stacye) read a paper upon "Sherwood Forest and Neighbourhood." After visiting the "Major Oak," the party returned to Worksop, and had tea at the Lion Hotel, before leaving for Sheffield. The weather was excellent.

Ancient Mural Paintings in South Leigh Church.—The parish church of South Leigh, near Oxford, was lately re-opened, after restoration, for divine service, by the Bishop of Oxford. The church has been entirely re-seated and re-floored, heating apparatus introduced, walls and windows repaired and partially rebuilt, rood-screen repaired and painted, and other renovations carried out. The paintings on the rood-screen and new altar have been executed by Mr. Sidney Gibbs, of Great Russell-street. On taking off the many coats of whitewash on the walls of the church, some wall paintings of the fifteenth century came to light. The paintings (in distemper), though faded, were quite capable of recovery, and Mr. Sibthorp undertook the charge of the work. The oldest are "The Resurrection" and the "Weighing of Souls." About 1,000*l.* have been already spent on the restoration.

Fatal Accident at Littleborough.—An inquest has been held at Littleborough, before Mr. J. Molesworth, touching the death of Sarah Stott, Jane Elizabeth Harrison, Elizabeth Hannah Mason, and Mary Devine, who were killed by the falling of a wall 70 ft. high at Frankfort mill. Mr. Heap, the manager of the mill, stated that about twenty minutes past five the weather was windy, and he saw a very bright flash of lightning, thunder following a few seconds after, and then he heard a noise which lasted a second. At once he opened the iron door, and found the east end gable had fallen. He went down and discovered that it had gone through the floor of the bottom room, and that six workpeople were buried, and then got assistance to release them. The inquest was adjourned.

Columbia and Farringdon Markets.—Mr. Deputy Fry asked the chairman of the Markets Committee, at the last meeting of the Common Council, if he would explain the present state of Columbia and Farringdon Markets. Mr. Fricker, the chairman, replied that as to Columbia Market the committee had lost no time in procuring evidence as to the practicability of making a tramway into the market; that the matter was still under consideration, which had been somewhat interrupted during the recess; and that, meanwhile, the market continued unoccupied as a market. The question of making Farringdon Market an institution worthy of the City was also under consideration, but it was an important subject, and involved many interests. We fear the Corporation will find Columbia Market a "white elephant."

Spontaneous Combustion of Wood.—At the opening sitting of the Paris Academy of Sciences, a letter was read from M. Collot, describing a case of spontaneous combustion in wood. A manufacturer, M. Wattier, of Ribemont, in the Aisne, happening to be in his yard at noon, on one of the hottest days of the present season, remarked that a beam, resting erect against a wall, emitted a very slight curl of smoke. It had been standing there many days, and there was nothing that could have set it on fire. On blowing upon it at a point where it was in contact with some old boards, a glimmer was perceived through a thin film of ashes that had been formed on the surface,—in short, the whole beam was being consumed by this superficial ignition, which, when observed, appeared to have lasted several hours.

New City Library.—The new library and museum for the City are rapidly approaching completion. The opening must depend on circumstances not altogether within the control of the committee under whose superintendence the work has been carried out, but it certainly cannot now be far distant. The main edifice, comprising in the basement the museum, with strong-rooms for the safe keeping of deeds and documents, and the library above, with adjoining reading-room, committee-room, &c., are all virtually completed. They are now receiving the final touches, and in the course of a week or two will be ready for the reception of the library and archæological treasures.

The Historical Medals of the London Corporation.—At the last meeting of the Common Council, a letter was read from the librarian of Trinity College, Cambridge, expressing a hope that the corporation might be willing to augment the collection of the college by a grant of copies of the several medals struck by the corporation in commemoration of various important events in its history. The application, which was well received by the Court, was referred to the Library Committee to consider and report, and Mr. J. T. Bedford took occasion to say that it would be a graceful act on the part of the corporation to distribute copies of its fine collection of medals among the various Continental towns and universities.

Free Library at Rochdale.—A free public library and a reading-room for the borough of Rochdale have been formally opened. The location of the library is in the town-hall. The books have been classified, removed to their proper places in the library-room at the town-hall, and all the necessary arrangements carried out. The total number of books purchased for the library is 11,274, at a cost of 1,916*l.* To these various donors have added 496, making a total of 11,770, divided thus:—Reference department, 3,738; lending department, 8,032. The specifications of patents have been arranged. There are also some interesting early specimens of the typographical art, of the dates of 1476 1484, and 1520.

Opening of a New Miners' Hall at Chesterton.—The corner stones of a Miners' Hall have been laid at Chesterton, in North Staffordshire, by Sir C. B. Adderley and Sir E. M. Buller, the members for North Staffordshire. The hall is to be capable of accommodating a thousand people, besides having a suite of rooms for reading-room, library, &c. After the first stone has been laid, Sir C. B. Adderley and Sir E. M. Buller addressed the vast crowd assembled to witness the ceremony.

School Grate.—A silver medal has been awarded to the "Manchester School Grate" for domestic and other purposes, at the Great Middleton Show.

Surveyor's Report, Montreal.—The report by the city surveyor of Montreal, Mr. P. Macquisten, of the various works executed by the Board department of the city during the year 1871, has been presented to the council, and issued in a printed form. New sewers are being made in various streets, and the surveyor recommends that all service-sewers from main sewers to buildings be of clay pipe, trapped, and constructed by men employed by the corporation. Great St. James-street is to be paved with wooden blocks, by Mr. D. McNevin, contractor. Tar composition is being laid on footpaths. Inspectors of contracts are advised.

Proposed Memorial Hall, Chesterfield.—An effort is about to be made on the part of the Chesterfield and Derbyshire Institute of Engineers to erect a public hall to the memory of the late George Stephenson, who resided at Tapton House, and was buried at Chesterfield. It is proposed to purchase a piece of ground, and then appeal to the whole mining district, claiming the town of Chesterfield as the metropolis of the eastern midland mining districts, and asking for support towards the erection of a larger institution for lectures, meetings, library, museum, &c., and a training school of mechanical and mining instruction.

Reduction in the Price of Copper.—Messrs. Crawley, Parsons, & Co., of Birmingham, in their last circular, remark:—"Copper has to-day been officially reduced 10*l.* per ton, making present prices—Tough ingot, 93*l.*; best selected, 95*l.*; and sheets, 100*l.* per ton." Messrs. Sims, Willyams, Nevill, & Co., announce present quotations as follows:—Copper, official reduction, 10*l.*; manufactured (strong), 100*l.* per ton; ordinary ingot, 93*l.* per ton; best selected, 95*l.* per ton; locomotive plates (plain), 102*l.* 10*s.* per ton. Yellow metal reduced ¼*d.* per lb.; sheathing and bolts, 8¼*d.* per lb.; composition nails, 10¼*d.* per lb.

Improved Cabs.—The Council of the Society of Arts have issued a paper announcing their intention to give a prize of 60*l.* for the best improved cab of any description; two prizes for the next two best, and two prizes of 10*l.* each for the next two best. The competing cabs must be exhibited at the International Exhibition to be held in South Kensington in 1873, and on their delivery at the Exhibition building they must be certified to the satisfaction of the judge as having been in regular use in the streets of London, or other city or town of the United Kingdom, for three months previously. They must be delivered on or before the first Saturday in April.

Fall of Part of a Chimney-stalk at Alyth. A brick chimney-stalk, in connexion with a new spinning-mill, at Alyth, in Scotland, is at present in course of erection, and when the men left the top, on Tuesday, at dinner-time, it had been built to the height of 28 ft. On the return of the men, one of them was being pulled to the top, and when about 10 ft. from the ground the appatatus gave way, and several feet of the brickwork fell amongst a group of people at the bottom. Two of them were struck by the falling mass, and severely injured. Considerable damage has been caused, and the work will be retarded.

Birkbeck Literary and Scientific Institution, Southampton-buildings, Chancery-lane.—This institution has just issued its prospectus for the winter session. Numerous classes in language, history, mathematics, physical and mental science, art, &c., are open to both ladies and gentlemen. A legal department has been added, comprising equity, conveyancing, and common law. Arrangements have also been made by which a complete course of technical instruction can be obtained. This will be valuable for students preparing for the examinations for the Whitworth Scholarships.

Working Men's College, Great Ormond-street.—We would direct attention to the programme for the new term, just now issued. There are six art-classes under the direction of Mr. W. Cave Thomas. The Rev. Dr. Barry, principal of King's College, will deliver the inaugural address on Wednesday, October 2nd, at 8·30 p.m. Several courses of lectures are announced.

Malvern.—The *Rock* says it is proposed to erect a district church at Malvern, as a memorial of the late Rev. George Fisk, the much-respected vicar. It is estimated that the cost will be 5,000*l.*

Money-making Underground.—A builder at Ashton writes:—"Whilst my workmen were engaged getting up the foundation of some cellaring at Winson Hill House, Soho, on Friday last, they came upon some large coiners' heating furnaces, in a fine state of preservation, totally hidden from view, and fully 5 ft. under the surface. They were bricked up in their furnace bed, and had no apparent opening thereto. They were found under the second or false floor of the ground-floor closet, and had no doubt been in that position more than a hundred years."

Workmen Abroad.—At a moment when the high price of provisions and the unsettled state of the labour market make the position of the working classes in this country somewhat uncertain, the appearance of a blue-book containing further reports from her Majesty's diplomatic and consular agents abroad respecting the condition of the industrial classes and the purchase power of money in foreign countries, is opportune. It gives a general survey of the condition of the workman in the leading countries of the world.

National Monument to Robert the Bruce. The local committee appointed to carry out the erection of the above monument met in the Council Chambers, Stirling. Mr. George Cruikshank's model was highly approved, and it was resolved that it should be publicly exhibited in a shop in King-street. The site granted by Government on the esplanade of Stirling Castle was cordially approved. The committee determined at once to raise the necessary amount of funds, which the chairman stated would not exceed 1,500*l.*

Proposed Statue of the Prince Consort.—On the motion of Mr. George Shaw, in the Court of Common Council of the City of London, the resolution of the 2nd of May last, referring it to the Improvement Committee to obtain a design for the pedestal of the statue of the late Prince Consort more suitable to the site, and considered with a special reference to the proportions of the statue, was rescinded, and it was referred to the committee to provide a suitable pedestal at an expense not exceeding 2,000*l.*

The New Law Courts.—An Act was passed in the late session to make considerable improvements in Sale-street and Carey-street, fronting the new Courts of Justice. The contemplated alterations, with the improvements, nearly completed in Lincoln's-inn, will form important metropolitan improvements. A company, called the Metropolitan Estates Company, has been dissolved, and a new company has been formed, with 300,000*l.* capital, by which a new class of buildings for the legal profession will be erected.

Remains of Old Westminster.—In making the foundation for St. Stephen's Club, at the corner of the Victoria Embankment, the workmen, after cutting through the road to the old bridge, and clearing away the accumulated rubbish and made soil of ages, reached in the maiden earth, at a depth of 20 ft., a thick wall built of stones of great size, and standing upon piles about 8 ft. long, topped with thick planks. The wall inclosed a considerable space.

A Strike in Paris.—A strike (says *Galignani*) has just broken out amongst the journeymen stone-cutters employed in the works of the new Palace of Justice, in Paris. The movement was at first insignificant, but has now become more serious, owing to an attempt made by the malcontents to deter others from their labour. Warrants of arrest have been issued against ten of the leaders.

Proposed Extension of the Factory Act. Sir John Lubbock has, it is stated, undertaken to introduce a Bill to extend the provisions of the Factory and Workshops Act to all shops open for the manufacture, sale, or repair of any article, or part of an article, throughout the United Kingdom.

TENDERS

For new parish church at Reading, Berks. Mr. Wm. Allen Dixon, architect. Quantities supplied:—

Manley & Rogers	£6,786	0	0
Wicks & Bangs	6,689	0	0
Nightingale	6,156	0	0
Staines & Son	5,876	0	0
Mann	5,780	0	0
Gibson, Brothers	5,685	0	0
Aitcheson & Walker	5,595	0	0
Nibblett (accepted)	5,462	0	0

For extension of offices for the Imperial Gas Company, at John-street, W.C. Mr. Frances Edwards, architect. Quantities by Mr. Cubitt Nichols:—

Mansbridge (accepted)	£3,429	0	0

For Blackburn Congregational Church. Messrs. John Tarring & Son, architects:—

Ives & Son	£18,928	0	0
Neill	16,820	0	0
Cooper & Tulks	14,825	4	7
Higson	13,728	0	0
Abbott	13,430	0	0
Peto, Brothers	12,136	0	0
Cook & Green	11,993	0	0
Luscombe (accepted)	11,437	0	0

For alterations and additions at No. 43, Leman-street, Whitechapel, for the East London Shoe Black Society. Mr. John Hudson, architect:—

Sparks	£1,747	0	0
Read & Son	1,734	0	0
Little	1,698	0	0
Outhwaite & Son	1,679	0	0

For warehouses and shops for the Co-operative Society, Lincoln. Messrs. Bellamy & Hardy, architects:—

Chappell	£7,500	0	0
Binns	7,067	0	0
Martin & Sims	6,843	0	0
Hobson & Taylor	6,797	0	0
Sharpe	6,690	0	0
Close	6,647	0	0
Brooks	6,598	0	0
Barnes & Wright	6,471	0	0
Huddleston & Son	6,258	0	0
Kendall	6,247	0	0
Young	6,225	0	0
Slingsby	5,834	0	0

For alterations to the Crown and Castle, Kingsland, for Mr. Hammond. Mr. R. Cotton, architect. Quantities not supplied:—

Chapps & Co.	£1,125	0	0
Kelly, Brothers	1,040	0	0
Brown	974	0	0
Jenkins	895	0	0
Bishop	849	0	0

For a pair of cottages on the Woodbridge-road Estate, Guildford. Mr. Henry Peak, architect:—

Strudwick	£339	0	0
Mason	336	0	0
Swayne & Sons	322	10	0
West (accepted)	315	0	0

For erecting Clarendon Lodge, Maida Vale. Mr. H. M. Burton, architect:—

Howard	£4,782	0	0
Gammon	4,735	0	0
Nightingale	4,582	0	0
Mitchell	4,500	0	0
Thorn	4,488	0	0
Timewell	4,350	0	0

For new schools at Pewsey, Easton, Wilts. Mr. S. Overton, architect:—

Dyer	£544	0	0
Nightingale	479	0	0
Pearce	402	0	0

For Western General Dispensary, Stafford-street, Marylebone. Mr. J. Saville, architect:—

Dove, Brothers	£5,275	0	0
Howard, Brothers	5,098	0	0
Hill, Keddell, & Waldram	5,040	0	0
Sharpington & Cole	4,953	0	0
Bayes & Ramage	4,900	0	0
Henshaw & Co.	4,890	0	0
Roberts	4,854	0	0
Adamson & Son	4,823	0	0
Gill	4,777	0	0
Nightingale	4,777	0	0
Longmire & Burge	4,744	0	0
Jackson & Shaw	4,662	0	0
Perry & Co.	4,650	0	0
Cranwell & Garrad	4,566	0	0

For new residence and stables at Horsham, Sussex, for Miss Paget. Mr. G. E. Street, architect. Quantities by Mr. C. Poland:—

	Residence.		Stables.	
	Local Stone.	Bath Stone.	Local Stone.	Bath Stone.
Dewdney	£5,733	£5,763	£660	£663
Bushby	5,647	5,482	665	661
Sharpington & Cole	5,527	5,290	667	661
Simpson	5,500	5,475	650	649
Dove, Brothers	5,475	5,475	695	695
Carruthers	5,375	5,375	665	665
Adamson & Son	5,533	5,161	665	659

For fittings, fixtures, &c., at the New Lambeth Workhouse, Kennington-lane. Messrs. R. Parris & T. W. Aldwinckle, architects. Quantities supplied:—

Mills	£4,124	0	0
Carter & Sons	3,697	0	0
Sharpington & Cole	3,600	0	0
Nightingale	3,598	0	0
Prebble & Morley	3,580	0	0
Ennor	3,550	0	0
Elliot	3,505	0	0
Mitchell	3,500	0	0
Crockett (accepted)	3,450	0	0

For the erection of school-houses, &c., at Old Ford-road, Bow (eastern site), for the School Board for London. Messrs. Henry Jarvis & Son, architects:—

Newman & Mann	£7,236	0	0
Williams & Son	6,783	0	0
Dove, Brothers	6,745	0	0
Roberts	6,699	0	0
Marsland	6,590	0	0
Hill	6,480	0	0
Henshaw	6,265	0	0
Tarrant	5,987	0	0

For alterations, &c., 108, Fleet-street. Messrs. Arding & Bond, architects:—

Pritchard	£633	0	0
Nightingale	555	0	0
Banford	490	0	0

For erection of pair of villa residences at Hammersmith. Mr. Wm. Paice, architect:—

Taylor	£1,150	0	0
George	1,100	0	0
Cook	1,080	0	0
Randall	1,066	0	0

For new National schoolroom and teacher's house at Wood-street, Worplesdon, Surrey. Mr. Henry Peak, architect:—

Swayne & Sons	£564	0	0
Pearce & Clark	510	0	0
Garnett	508	0	0
Mason	499	0	0
Strudwick	495	10	0
T. & J. Loe (accepted)	453	0	0

For proposed new carpenter's shop and laboratory for physiological chemistry at St. George's Hospital, Hyde Park-corner. Mr. Stephen Salter, jun., architect. Quantities by Mr. S. J. Thacker:—

Wadsworth	£390	0	0
Langmead & Way	365	0	0
Holland & Hannen	345	0	0
Sprake	337	0	0
Dove	295	0	0
Hill	294	0	0
Axford	275	0	0

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THE ART-JOURNAL for October (price 2s. 6d.) contains the following LINE ENGRAVINGS:—
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PURSUANT to an Order of the High Court of Chancery, made in the Matter of the Estate of HENRY CARTER, deceased, and in a Cause wherein MARY CARTER, an Infant under the age of 21 years, by WILLIAM LOEBEE, her next friend, are Plaintiffs, against EMMA CARTER, Defendant, the Creditors of Henry Carter, late of White Post-lane, Little Ilford, in the county of Essex, Builder, deceased, who died in or about the month of May, 1872, are on or before the 30th day of SEPTEMBER, 1872, to send by post, prepaid, to WILLIAM ROBERT PHILP, of No. 5, Pancras-lane, in the City of London, the Solicitor of Emma Carter, the administratrix of the said Henry Carter, deceased, their Christian and Surnames, addresses and descriptions, the full particulars of their claims, a statement of their accounts, and the nature of the securities (if any) held by them. Or in default thereof they will be peremptorily excluded from the benefit of the said Order. Every creditor holding any security is to produce the same before the Vice-Chancellor, Sir Richard Malins, at his Chambers, situated No. 3, Stone Buildings, Lincoln's Inn, Middlesex, on MONDAY, the 4th day of NOVEMBER, 1872, at TWELVE o'clock at noon, being the time appointed for adjudicating on the claims. Dated this 14th day of August, 1872.
ALFRED RAWLINSON, Chief Clerk.
JOHN RAE, Plaintiffs' Solicitor, 9, Mincing-lane, E.C.

W. H. BARBER, Surveyor, 12, Buckingham-street, Strand, W.C. twenty years with Messrs. Myers and Messrs. Mansfield, has REMOVED his OFFICES to the above address. Quantities and Estimates prepared, and every kind of assistance rendered on moderate and mutual terms. DISPUTED AND INTRICATE ACCOUNTS ESPECIALLY ATTENDED TO.

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Town-hall, Oldham, September 20th, 1872.

BOROUGH of SALFORD.—BOROUGH ENGINEER and SURVEYOR.—The Corporation of Salford require the SERVICES of a BOROUGH ENGINEER and SURVEYOR. He will be required to devote the whole of his time to the duties of his office. Salary, 600l. a year. A list of the duties may be had from the Town Clerk, Town-hall, Salford. Applications, with testimonials, endorsed "Application for Engineer and Surveyor," to be sent in on or before FRIDAY, the 11th day of OCTOBER, 1872.—By order, EDWIN ANDREW, Town Clerk.
Town-hall, Salford, September 24th, 1872.

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